

**EPA SLN No. IL080001**

## NOTE TO FILE

date: 3/12/2010  
from: Tom Harris, RD/IRB  
re: history of Treeage SLNs

Treeage is a 4.0% liquid formulation of emamectin benzoate. The product is used straight or mixed with water, poured into commercial tree injection equipment, and injected into trees.

The Sec 3 application for 100-RGNO was received from Syngenta on 12/21/2007 for a general use product to be used on a variety of ornamental trees to control a variety of pests. The product was registered on 7/11/2009 as an RUP for use on ash trees only to control emerald ash borer. A subsequent amendment was approved 11/13/2009 adding a 2-year efficacy claim. A minor amendment was approved 3/24/2010 to remove stray text referring to non-ash sites.

On 3/27/2008 EPA received the first SLN application (WV080002<sup>1</sup>). This was followed over the next year by similar SLNs in IL, IN, KY, MD, MI, MN, MO, OH, PA, VA, and WI. Even though the Sec 3 was not yet registered there was much interest in the product to control Emerald Ash Borer (EAB), an imported pest which had gained quarantine pest status. There were few alternatives (imidacloprid and dinotefuran will also control EAB; see those files for exactly when <sup>each</sup> they chemical was registered for this use) and emamectin provided excellent and long lasting control.

To handle this unusual situation (an SLN on a unregistered Sec 3 product) we came up with the following approach. The product container was labeled with a minimal label with basic identification, handling, disposal statements, and a reference to see any applicable state label. There were no application instructions on the product container; instead, the SLN detailed the application instructions. Both container and SLN labels were general use.

When the Sec 3 was finally registered it was as a restricted use pesticide (RUP) due to acute tox to worker (eye II). Application was restricted to ash trees for EAB. Essentially, the accepted Sec 3 label duplicated the SLNs and eliminated the need for separate SLNs. However, Syngenta did not want to go into full scale production until a 2-year efficacy claim was added to the label. They had attempted to include this claim from the beginning but satisfactory efficacy data was not submitted until Fall 2009 with the resulting label approved on 11/13/2009. At this point, Syngenta had what they considered a marketable product but a contract agreement called for the end-use product to be actually marketed by a distributor, Arborjet. Due to contract negotiations and Arborjet's production schedule, final product was not anticipated to be available until summer 2010.

**Treeage - emamectin, tree injection for Emerald Ash Borer**  
**Sec 3 (100-1309) registered 7/11/2009**

**Summary Report**

expiration date

Registration #	Name	Status	Restricted Use Product	Company #	Company Name	Percent Active Ingredient	Active Ingredient
IL080001	TREEAGE-AGE	Under Review (16-Apr-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expires 4/15/2013
IN080001	TREE-AGE	Under Review (25-Mar-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate no expiration given
KY090029	TREE-AGE	Under Review (09-Jun-2009)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expired 12/31/09
MD090001	TREE-AGE	Under Review (26-Feb-2009)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expired 12/31/09
MI080001	TREE-AGE	Under Review (28-Mar-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expires 12/31/14
MN080009	TREE-AGE	Under Review (03-Jul-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate no expiration given
MO080006	TREE-AGE	Under Review (21-Nov-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate no expiration given
OH080002	TREE-AGE	Under Review (25-Mar-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate no expiration given
PA090001	TREE-AGE	Under Review (02-Jan-2009)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expires 12/31/2014
VA080008	TREEAGE-AGE	Under Review (18-Nov-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	emamectin benzoate expires 12/31/10 ?

OPPIN Query 3/9/2010, expirations edited 3/11/10

WI080005	TREE-AGE	Under Review (18-Nov-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	expired 12/31/09	tin benzoate
WV080002	TREE-AGE	Under Review (28-Mar-2008)	N	100	SYNGENTA CROP PROTECTION, INC.	4	expires 12/31/10 ?	tin benzoate

OPPIN Query 3/9/2010, expirations edited 3/11/10



State Regulatory Affairs  
410 Swing Road  
Greensboro, NC 27419

Telephone: (336) 632 2146  
Fax: (336) 632 2884

March 12, 2010

Scott Frank  
Manager, Support Services  
Bureau of Environmental Programs  
Illinois Dept of Agriculture  
PO Box 19281, 801 E. Sangamon Ave  
Springfield, IL 62794-9281

<p>SUBJECT: TREE-äge™ (EPA Reg. No. 100-1309) EPA SLN No. IL-080001 Cancellation of Section 24(c) Active Ingredient: Enamectin Benzoate</p>
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Dear Mr. Frank:

Syngenta Crop Protection is requesting immediate cancellation of the subject Section 24(c).

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Larry Zang".

Larry Zang  
Senior Regulatory Manager

NEW APPLICATIONS

DATE: 04-16-2008

FILE NUMBER: IL 080001

FEP (OPPIN ENTRY)

Bj

(Initial & date)

FILE ROOM:

(Initial & date)

SIG: SA 4/17/08

(Initial & date)

FILE ROOM:

04 4/14  
(Initial & date)

\_\_\_ ASSIGN TO PM

X 7

(NO DATA)

\_\_\_ JACKET TO SHELF (DATA)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

April 16, 2008

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Illinois Department of Agriculture  
P.O. Box 19281  
Springfield, IL 62794-9281

ATTN: Scott frank, Manager

Dear State Agency:

The Office of Pesticide Programs acknowledges receipt of the Section 24(c) application/notification for IL080001.

The package is being forwarded to the Product Manager for review.

To ensure that the Agency receives proper notification of your 24(c) applications/notifications it is necessary to use the correct mailing address. All new 24(c) applications should be sent to the following:

Document Processing Desk (SLN)  
Office of Pesticide Programs -7504P  
U.S. Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

If you have any questions concerning the administrative screening of the package please contact the Front End Unit at (703)305-5780.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. B. Puma".

Front End Processing Staff  
Information Services Branch  
Information Technology & Resources Management Division





Rod R. Blagojevich, Governor  
Thomas E. Jennings, Acting Director

### Bureau of Environmental Programs

State Fairgrounds • P.O. Box 19281 • Springfield, IL 62794-9281 • 217/785-2427 (voice/TDD) • Fax 217/524-4882  
Pesticide Misuse Hotline 1-800-641-3934 (voice/TDD)

April 15, 2008

SLN Processing  
Office of Pesticide Programs 7504P  
U.S. Environmental Protection Agency  
2777 S. Crystal Drive  
Arlington, VA 22202

Sent via Federal Express

Dear Sir/Madam:

The Illinois Department of Agriculture has approved a Section 24(c) Special Local Need (SLN) request from Syngenta Crop Protection, Inc. for the use of TREE-age<sup>TM</sup> insecticide (EPA file symbol 100-RGNO, active ingredient emamectin benzoate) to control Emerald Ash Borer in ash trees in Illinois.

Registration number:	IL080001
Effective date:	April 15, 2008
Expiration date:	April 15, 2013

State regulations limit the time period for a special local need registration to five years.

Since the use of this product will be on non-food crops, a tolerance is not applicable.

This request qualifies as a special local need due to the nature of the pest and the infestation. Emerald ash borer has been discovered in Michigan, Ohio, Indiana, and the northeastern portion of Illinois. Research has shown that emamectin benzoate provides a high level of control of emerald ash borer. Application of this product via injection into the tree will reduce environmental impacts compared to spraying or soil drench methods. Dr. Philip Nixon from the University of Illinois Department of Natural Resources and Environmental Sciences supports the request. His letter of support is enclosed.

The Department is not aware of any impact on endangered species. Enclosed is a list of federally threatened and endangered species for Illinois. Due to the expense of treatments, most of the ash trees are expected to be treated in residential areas and other inhabited locations where the likelihood of the presence of endangered species is low or nonexistent. The application method (direct injection) greatly reduces the likelihood of pesticide exposure to off-target sites including threatened and endangered species. Additionally, on the U.S. EPA *Bulletins Live!* website, no limitations are listed for the counties in the emerald ash borer quarantine zone.

Enclosed is a copy of Form 8570-25, *Application for/Notification of State Registration of a Pesticide to Meet a Special Local Need*. Also, enclosed is a copy of the data package supplied by Syngenta, including copies of the SLN label, the SLN container booklet, and the draft section 3 label.

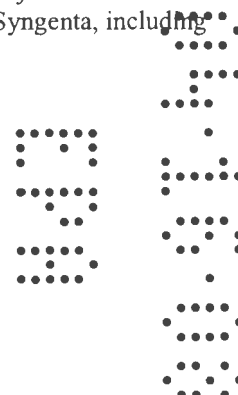
Feel free to contact me with any questions at 217-785-2427.

Sincerely,



Scott Frank, Manager  
Support Services

Enclosures

cc: Larry Zang, Syngenta (w/o data package)  
USEPA Region 5 (w/o data package)





	United States Environmental Protection Agency Office of Pesticide Programs, Registration Division (7505C) Washington, DC 20460		For State Use Only Registration No. Assigned IL080001
	Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need <i>(Pursuant to section 24(c) of the Federal Insecticide,          Fungicide, and Rodenticide Act as Amended)</i>		Date Registration Issued April 15, 2008
1. Name and Address of Applicant for Registration Syngenta Crop Protection, Inc. PO Box 18300 Greensboro, NC 27419		2. Product is (Check one) EPA-Registered <input type="checkbox"/> New (not EPA-registered) <input checked="" type="checkbox"/> Attach EPA Form 8570-4, Confidential Statement of Formula for new products.	
		EPA Registration Number 100-RGNO EPA Company Number 100	
4. Product Name TREE-age™		3. Active Ingredient(s) in Product Emamectin benzoate	
6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form): <input checked="" type="checkbox"/> a. To permit use of a new product. <input type="checkbox"/> b. To amend EPA registration for one or more of the following purposes: <input type="checkbox"/> (1) To permit use on additional crops or animals. <input type="checkbox"/> (2) To permit use at additional rates. <input type="checkbox"/> (3) To permit use against additional pests. <input type="checkbox"/> (4) To permit use of additional application techniques or equipment. <input type="checkbox"/> (5) To permit use at different application sites. <input type="checkbox"/> (6) Other (specify below) See paragraph 13		5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180. 186, and/or 186. non-food use	
		7. Nature of Special Local Need (check one) X - See paragraph 13 <input type="checkbox"/> There is no pesticide product registered by EPA for such use. <input checked="" type="checkbox"/> There is no EPA-registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration. <input type="checkbox"/> As appropriate EPA-registered pesticide product is not available.	
10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known): <input checked="" type="checkbox"/> Sought <input checked="" type="checkbox"/> Issued <input type="checkbox"/> Denied <input type="checkbox"/> Revoked If any of the above are checked, list States in Item 13 below. <input type="checkbox"/> No FIFRA section 24(c) Action		8. If this registration is an amendment to an EPA-registered product, is it for a "new use" as defined in 40 CFR 152.3? <input type="checkbox"/> Yes (discuss in Item 13 below) <input type="checkbox"/> No	
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		9. Has an EPA Registration or Experimental Use Permit for this chemical even been (check applicable box(es), if known): <input checked="" type="checkbox"/> Sought <input type="checkbox"/> Issued <input type="checkbox"/> Denied <input type="checkbox"/> Cancelled <input type="checkbox"/> Suspended <input type="checkbox"/> Registration <input type="checkbox"/> Experimental Use Permit <input type="checkbox"/> No Previous Permit Action	
Signature of Applicant or Authorized Representative 		11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form.) Identify the counties where this pesticide will be used. If Statewide, indicate "all." Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use.	
Title    Larry Zang Sr. Regulatory Manager		12. Indicate use status of Special Local Need, i.e., planned dates of use: From:    January    To:    December	
Telephone Number    800-334-9481 ext 2146    Date    March 20, 2008		13. Comments (attach additional sheet, if needed) 10. SLN being sought for product pending Section 3 registration at EPA WV approved as SLN No. WV-080002 11. All	
Determination by State Agency This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments			
Name, Title, and Address of State Agency Official Scott Frank Illinois Dept. of Agriculture P.O. Box 19281 Springfield, IL 62794-9281		Comments (by State Agency Only) Expires 4-15-2013	
Title Manager, Support Services		Received by EPA	
Telephone Number    217-785-2427    Date    4-15-08			

**syngenta**

**TIERA**

**FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF ILLINOIS**

**TREE-äge™**

**EPA SLN No. IL- 080001**

**For control of Emerald Ash Borer in Ash Trees (*Fraxinus spp.*),  
Tree Injection Only**

Active Ingredient:	
Enamectin Benzoate <sup>1</sup>	4.0%
Other Ingredients:	96.0%
Total:	100.0%

<sup>1</sup>CAS No.155569-91-8

**KEEP OUT OF REACH OF CHILDREN.**

**WARNING/AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use on label and in booklet

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY  
RESULT IN POOR INSECT CONTROL, AND/OR CROP INJURY.,

**Environmental Hazards**

This product is highly toxic to fish, mammals and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater. This product is highly toxic to bees exposed to direct treatment or residues on blooming trees.

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**DIRECTIONS FOR USE**

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It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the TREE-äge container label.

This label must be in the possession of the user at the time of pesticide application.

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**APPLICATION TO ASH TREES (*Fraxinus* spp.)**

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TREE-äge is for control of emerald ash borer on ash trees growing in residential and commercial landscapes, parks, plantations, right of ways, seed orchards, and forested sites (in private, municipal, state, tribal and national areas). TREE-äge contains the active ingredient emamectin benzoate and is formulated to translocate in the tree's vascular system when injected. To assure optimum effectiveness, this product must be placed into active sapwood.

**WHEN TO TREAT**

TREE-äge contains the active ingredient emamectin benzoate which is a glycoside insecticide. It is active against larva and adult Emerald Ash Borer. The primary route of toxicity is through ingestion, but may also be lethal upon contact.

**ENVIRONMENTAL CONDITIONS:** Uptake of TREE-äge is dependent upon the tree's transpiration. Transpiration is dependent on a number of abiotic and biotic factors, such as soil moisture, soil and ambient temperature, and time of day. For optimal uptake, apply when soil is moist, soil temperatures are above 45°F, ambient temperatures are between 40° to 90°F, and during the 24 hour period when transpiration is greatest, typically before 2:00 PM. Applications to drought or heat stressed trees may result in injury to tree tissue, poor treatment and subsequent control. Watering the trees prior to injection may enhance the uptake of TREE-äge.

**MONITOR TREE HEALTH and PEST INFESTATIONS:** Effective injection treatment is favored by a full canopy (i.e., leaves) and healthy vascular system. Once these tissues are compromised by arthropod damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of TREE-äge may be difficult to achieve and subsequent control may be poor. Optimally, treatment should be made preventively at least 2 to 3 weeks before Emerald Ash Borer historically infest the host tree. As a result of systemic movement and longevity of TREE-äge in trees, this interval may be extended much earlier to 6 months should tree dormancy, adverse weather, management, asynchronous life cycle of pests, etc., allow earlier application timing.

TREE-äge may also be effective as a curative treatment against Emerald Ash Borer. Adult foliar feeding may be controlled within one month after treatment. During the larval stage, Emerald Ash Borer attacks the stem and branches and will disrupt vascular tissue that may result in poor distribution of TREE-äge in an infested tree. However, control may be achieved if larvae come into contact or feed on TREE-äge treated tissues.

## USE

Use as formulated or dilute with equivalent 1 to 3 volumes of water or more, as necessary.

## USE RATE TABLE

Tree Diameter (DBH) (Inches)	Low ml./tree	Medium ml./tree	Medium - High ml./tree	High ml./tree	Average No. Injection Sites*
4 to 6	15	25	50	-	3
7 to 9	20	40	80	-	4
10 to 12	30	55	110	165	5
13 to 15	35	70	140	210	6
16 to 18	40	75	150	225	7
19 to 21	50	100	200	300	8
22 to 24	-	115	230	345	10
25 to 27	-	130	260	390	11
28 to 30	-	145	290	435	12
31 to 33	-	160	320	480	13
34 to 36	-	175	350	525	15
37 to 39	-	190	380	570	16
40 to 42	-	205	410	615	17
43 to 45	-	220	440	660	18
46 to 48	-	235	470	705	20
49 to 51	-	250	500	750	21
52 to 54	-	265	530	795	22
55 to 57	-	280	560	840	23
58 to 60	-	295	590	885	25
61 to 63	-	310	620	930	26
64 to 66	-	325	650	975	27
67 to 69	-	340	680	1020	28
70 to 72	-	355	710	1065	30

\* The number of injection sites listed is a guide for approximately how many are needed per size of tree.

For optimal control, it is recommended to be with  $\pm 1$  injection site of this number per tree.

Higher rates tend to provide longer residual and control of more difficult to control insects. See **Target Pest** for additional information in choosing the amount of product to apply.

### Applications in Trees

Tree Tissue to Protect	Target Pest	Recommended Rate	Comments
Foliage, Shoot, Stem, Trunk and Branch	Emerald Ash Borer- Adult and Larval stages	Low to High	<p>For optimal control apply at least 30 days before historical egg hatch or adult flight and to trees whose vascular tissue is not damaged.</p> <p>If vascular tissue is damaged or plugged by insect galleries, nematodes or fungi, uniform treatment and control may not be achieved.</p>

### Compatibility

Do not mix TREE-äge before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants, and fertilizers.

### RESTRICTIONS

- Do not apply to trees that may yield food consumed by humans or used in animal feed.
- Avoid treating trees that are moisture stressed or suffering from herbicide damage.

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## **STORAGE AND DISPOSAL**

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Do not contaminate water, food, or feed by storage and disposal.

### **Pesticide Storage**

Store in a cool, dry place, away from children and pets. Keep from freezing.

### **Pesticide Disposal**

Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

### **Container Disposal**

Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

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TREE-äge™ trademark of Arborjet, Inc.

24(c) registrant:  
Syngenta Crop Protection, Inc.  
P.O. Box 18300  
Greensboro, NC 27419-8300

ILRGNO041AA0408

This product is approved for distribution and use only under FIFRA Section 24(c) for control of arthropod pests in trees. The user must have a copy of the state-approved FIFRA Section 24(c) label which permits use of this product at the time of pesticide application and follow all directions for use, restrictions, and precautions. Contact your state department of agriculture or state agency responsible for pesticide regulation to determine if a Section 24(c) is in effect in your state.

## TREE-äge™

**Injected insecticide for the control  
for arthropod pests in trees.**

**ACTIVE INGREDIENT:**

Emamectin Benzoate<sup>1</sup>..... 4.0%  
Other Ingredients ..... 96.0%  
Total ..... 100.0%

<sup>1</sup>CAS No. 155569-91-8

Net Contents: 1.06 quarts (1 liter)

EPA Est. 39578-TX-1

**KEEP OUT OF REACH  
OF CHILDREN.**

**WARNING/AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use in booklet.

**PRECAUTIONARY STATEMENTS:**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

Causes substantial but temporary eye injury.

Do not get in eyes or on clothing. Wear protective eyewear.

Harmful if swallowed. Wash thoroughly with soap and water after

handling and before eating, drinking, chewing gum, or using tobacco.

Remove and wash contaminated clothing before reuse.

**FIRST AID**

If in eyes	<ul style="list-style-type: none"><li>•Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>•Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>•Call a poison control center or doctor for treatment advice.</li></ul>
If swallowed	<ul style="list-style-type: none"><li>•Call poison control center or doctor immediately for treatment advice.</li><li>•Have person sip glass of water if able to swallow.</li><li>•Do not induce vomiting unless told to do so by the poison control center or doctor.</li><li>•Do not give anything by mouth to an unconscious person.</li></ul>

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

**HOT LINE NUMBER**

For 24-Hour Medical Emergency Assistance (Human or Animal), Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident) Call 1-800-888-8372

TREE-äge™ is a registered trademark of Arborjet, Inc. Manufactured for: Syngenta Crop Protection, Inc. P.O. Box 18300, Greensboro, North Carolina 27419-8300 www.syngenta-us.com SCP A23 0108 254522



This product is approved for distribution and use only under FIFRA Section 24(C) for control of arthropod pests in trees. The user must have a copy of the state-approved FIFRA Section 24(c) label which permits use of this product at the time of pesticide application and follow all directions for use, restrictions, and precautions. Contact your state department of agriculture or state agency responsible for pesticide regulation to determine if a Section 24(c) is in effect in your state.

## TREE-age™

Injected insecticide for the control  
for arthropod pests in trees.

Active Ingredient:

Ethion Benzoate <sup>1</sup> .....	4.0%
Other Ingredients .....	96.0%
Total .....	100.0%

<sup>1</sup>CAS No. 155569-91-8

Net Contents: 1.06 quarts (1 liter)

EPA Est. 39578-TX-1

SCPA22 0108 254523

KEEP OUT OF REACH OF CHILDREN.

WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use in booklet.

**PRECAUTIONARY STATEMENTS:  
HAZARDS TO HUMANS AND  
DOMESTIC ANIMALS**

**WARNING/AVISO:** Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Wear protective eyewear. Harmful if swallowed. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

**FIRST AID**

If in eyes	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
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If swallowed

- Call poison control center or doctor immediately for treatment advice.
- Have person sip glass of water if able to swallow.
- Do not induce vomiting unless told to do so by the poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

**NOTE TO PHYSICIAN**

Early signs of intoxication include dilation of pupils, muscular incoordination, and muscular tremors. Vomiting within one-half hour of exposure can minimize toxicity following accidental ingestion of the product rapidly after exposure (< 15 minutes) administer repeatedly medical charcoal in a large quantity of water or ipecac. If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant

fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure, levels and proper respiratory functionality) as indicated by clinical signs, symptoms, and measurements. In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since emamectin benzoate is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic emamectin benzoate exposure.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

**HOT LINE NUMBER**  
For 24-Hour Medical Emergency Assistance (Human or Animal),  
Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident)  
Call 1-800-888-8372

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- shoes and socks
- protective eyewear

#### ENVIRONMENTAL HAZARDS

This product is highly toxic to fish, mammals and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater. This product is highly toxic to bees exposed to direct treatment or residues on blooming trees.

#### PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

#### CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, Inc. or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical

description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE

EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

#### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**IMPORTANT:** Read entire label before using this product. Failure to follow label instructions may result in poor control or tree injury. Failure to follow label directions may cause injury to people, animals and environment.

#### APPLICATION TO TREES

TREE-äge is for control of mature and immature arthropod pests of trees, including, but not limited to, those growing in residential and commercial landscapes, parks, plantations, seed orchards, and forested sites (in private, municipal, state, tribal and national areas).

TREE-äge contains the active ingredient emamectin benzoate and is formulated to translocate in the tree's vascular system when injected. To assure optimum effectiveness, this product must be placed into active sapwood.

#### GENERAL DIRECTIONS

TREE-äge is designed for use with tree injection devices that meet the label and dose requirements (for example, the Arborjet Tree Injection Systems) for the control of listed pests of trees. Follow manufacturer's directions for equipment use.

Dosages are based on the Diameter (in inches) of the tree at Breast Height (DBH"). Breast height is a standardized distance of 54" from the ground. Often the diameter is determined from measuring the circumference of the tree at this height, and dividing circumference (in inches) by three (3). To determine DBH" for multi-stemmed woody ornamentals, measure the DBH" for each stem or branch and add together for the total DBH" per tree.

**Placement of Application/Injection Sites:** for optimum distribution, inject at the base of the tree. Inject

into the stem within 12" of the soil, into the trunk flare or into tree roots exposing them by shallow excavation. Make applications into intact, healthy sapwood. Avoid injured areas or areas with decay. Select injection sites associated with stem growth.

**Number of Injection Sites:** Work around the tree, spacing injection sites approximately every 6.0 inches of tree's circumference.

**Drill Depth:** Drill through the bark then 5/8" to 1-5/8" (hardwoods) or 1-5/8" to 2" (conifers) into the sapwood with the appropriate sized drill bit. Use clean, sharp drill bits. Brad point bits are recommended. Precautions should be taken to avoid diseased areas and transferring infected tissues to other injection sites.

**Resinous Conifers:** In resinous conifers, such as pine and spruce, start the injection immediately after drilling into the sapwood. A

prolonged delay may reduce uptake on account of resin flow into opening.

#### WHEN TO TREAT

TREE-äge contains the active ingredient emamectin benzoate which is a glycoside insecticide. It is active against immature and adult stages of arthropods. The primary route of toxicity is through ingestion, but may also be lethal upon contact.

#### ENVIRONMENTAL

**CONDITIONS:** Uptake of TREE-äge is dependent upon the tree's transpiration. Transpiration is dependent on a number of abiotic and biotic factors, such as soil moisture, soil and ambient temperature, and time of day. For optimal uptake, apply when soil is moist, soil temperatures are above 45°F, ambient temperatures are between 40° to 90°F, and during the 24 hour period when transpiration is greatest, typically before 2:00 PM. Applications to drought or heat stressed trees may result in injury to tree tissue, poor treatment and

subsequent control. Watering the trees prior to injection may enhance the uptake of TREE-äge.

#### MONITOR TREE HEALTH and

**PEST INFESTATIONS:** Effective injection treatment is favored by a full canopy (i.e. leaves) and healthy vascular system. Once these tissues are compromised by arthropod damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of TREE-äge may be difficult to achieve and subsequent control may be poor. Optimally, treatment should be made preventively at least 2 to 3 weeks before arthropods historically infest the host tree. As a result of systemic movement and longevity of TREE-äge in trees, this interval may be extended much earlier to 6 months should tree dormancy, adverse weather, management, asynchronous life cycle of pests, etc., allow earlier application timing.

**Compatibility:** Do not mix TREE-äge before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants, and fertilizers.



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**RESTRICTIONS**

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- Do not apply to trees that may yield food consumed by humans or used in animal feed.
- Avoid treating trees that are moisture stressed or suffering from herbicide damage.

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**STORAGE AND DISPOSAL**

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Do not contaminate water, food, or feed by storage and disposal.

**Pesticide Storage:** Store in a cool, dry place, away from children and pets. Keep from freezing.

**Pesticide Disposal:** Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**Container Disposal:** Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

TREE-äge is a registered trademark of Arborjet, Inc.

Manufactured for:  
Syngenta Crop Protection, Inc.  
P.O. Box 18300  
Greensboro, North Carolina  
27419-8300

[www.syngenta-us.com](http://www.syngenta-us.com)  
SCP A22 0108 254523

This product is approved for distribution and use only under FIFRA Section 24(C) for control of arthropod pests in trees. The user must have a copy of the state-approved FIFRA Section 24(c) label which permits use of this product at the time of pesticide application and follow all directions for use, restrictions, and precautions. Contact your state department of agriculture or state agency responsible for pesticide regulation to determine if a Section 24(c) is in effect in your state.

#### NOTE TO PHYSICIAN

Early signs of intoxication include dilation of pupils, muscular incoordination, and muscular tremors. Vomiting within one-half hour of exposure can minimize toxicity following accidental ingestion of the product; rapidly after exposure (< 15 minutes) administer repeatedly medical charcoal in a large quantity of water or ipecac. If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given along with other required supportive measures (such as maintenance of blood pressure levels and proper respiratory functionality) as indicated by clinical signs, symptoms, and measurements. In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since emamectin benzoate is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic emamectin benzoate exposure.

SCP A22 0108 254523

**STORAGE AND DISPOSAL:** Do not contaminate water, food, or feed by storage and disposal.

**PESTICIDE STORAGE:** Store in a cool, dry place, away from children and pets. Keep from freezing.

**PESTICIDE DISPOSAL:** Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Triple rinse or equivalent. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.



RECEIVED

2008 APR -1 A 9:31

Department of Natural Resources  
and Environmental Sciences  
S-408 Turner Hall  
1102 S. Goodwin Ave.  
Urbana, IL 61801  
March 28, 2008

Mr. Scott Frank  
IDA/Bureau of Environmental Programs  
P.O. Box 19281  
Springfield, IL 62794-9281

Dear Mr. Frank:

The University of Illinois supports the registration under FIFRA Section 24(c), Special Local Need, for emamectin benzoate under the trade name, TREE-age, in Illinois to control emerald ash borer (*Agrilus planipennis*) in ash trees (*Fraxinus*).

Research conducted in Michigan by Dr. Deb McCullough, Michigan State University, and others have shown that emamectin benzoate applied as an injected product into trees provides a high level of control of emerald ash borer, with subsequent improved survival of infested ash trees. This research has shown a higher level of control than other insecticides available for the control of this serious pest. There are also indications that applications of emamectin benzoate provide longer-lasting control than other insecticides.

This increased insecticidal efficacy and longevity should result in improved tree survivability, reduced environmental impact, and cost savings to Illinois residents if this insecticide is labeled for use in Illinois.

Emamectin benzoate's relatively low oral and dermal toxicity result in its labeling as a Class III toxicity product carrying a signal word of Caution. Its application as an injectable insecticide into tree tissue also greatly lessens its environmental impacts. For these reasons, we also support its labeling as a General Use Pesticide.

Sincerely,

Philip L. Nixon  
Extension Entomologist

## Master List

ASH: *Fraxinus pennsylvanica* Marsh. D. R. Smitley, K. F. Newhouse & T. W. Davis  
EMERALD ASH BORER; Department of Entomology  
*Agrilus planipennis* Fairmaire Michigan State University  
East Lansing, MI 48824-1115  
517-355-3385  
tdavis@msu.edu

**EMERALD ASH BORER (EAB) CONTROL ON STREET TREES, 2007:** Ash street trees in a neighborhood in East Lansing, MI were used for this test (Ingham Co, MI T2N R1W Sec 1, 7, 8, 12, 17, 24). These trees were between 14 and 28 years old and ranged in size from 10-24 inches in diameter at breast height (DBH). The mean DBH was 14 inches. The trees used in the test were planted and maintained by the city of East Lansing and were located between the street and the sidewalk in seven different neighborhoods. Trees were spaced a minimum of 50 ft apart. The tree canopies ranged from 15 to 45 feet in diameter, and in no case did they overlap. Tree trunks were measured and marked with a metal tag during the first week of August 2005. Lawns where study trees were located were well maintained, but very few were irrigated. Each treatment was replicated 10 times with each replicate consisting of an individual tree. The following is a list of products tested, type of application, rate, and application date:

- 1) Enamectin benzoate formulation trunk injection – sponsored by ArborJet and Syngenta. The injections were made with the ArborJet Tree IV system. 0.4 grams ai/ inch DBH was injected through 4 injection sites per tree through a plastic septum (Arborjet #4 plug - 3/8") at 45 psi diluted to a 1:1 ratio with water on 27 Sep, 2005.
- 2) Enamectin benzoate formulation trunk injection - sponsored by ArborJet and Syngenta. The injections were made with the ArborJet Tree IV system. 0.4 grams ai/ inch DBH was injected through 4 injection sites per tree through a plastic septum (ArborJet #4 plug - 3/8") at 45 psi diluted to a 1:5 ratio with water on 28 Sep, 2005.
- 3) ArborJet ImaJet (5% imidacloprid) trunk injection spring treatment 2005, 2007. The injections were made with the ArborJet Procap System. Each Procap (4 per tree) was pressurized to 45 psi and is inserted into a 7/32" hole. ImaJet was applied at 0.2 gr ai/inch DBH in trees with less than 12" DBH and 0.4 gr ai/inch DBH in trees greater than 12" DBH on 29 Sep, 2005. The trees were retreated using the ArborJet Tree IV system in 2007. The same rate of ImaJet was injected through the 4 injection sites per tree through a plastic septum (ArborJet #4 plug - 3/8") at 45 psi on 21 May, 2007.
- 4) Merit Tree Injection 200 SL (200gr imidacloprid/liter) fall treatment 2005. The injections were made with the ArborJet VIPER (Volume Injection Pressure Enhanced Reservoir) injection system at a rate of 0.4 gr ai/inch DBH.

The number of plugs inserted into each tree was determined by DBH/2. Each injection was made through a plastic septum (Arborjet #3 plug - 9/32") at 150-200psi on 17 Oct, 2005.

- 5) Merit Tree Injection 200 SL (200gr imidacloprid/liter) fall treatment 2005. The injections were made with the ArborJet VIPER injection system at a rate of 0.6 gr ai/inch DBH. The number of plugs inserted into each tree was determined by DBH/2. Each injection was made through a plastic septum (Arborjet #3 plug - 9/32") at 150-200psi on 17 Oct, 2005.
- 6) Untreated Control
- 7) Bayer Advanced Tree and Shrub (1.47% imidacloprid (14.9gr ai/L)) basal soil drench - was applied at a rate of 1.38gr ai/inch DBH. 90ml product/inch DBH of Bayer Advanced was mixed in a total of 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk. Applications were made on 27 Oct, 2005, 14 Dec, 2006 and 28 Nov, 2007.
- 8) Bayer Advanced Tree and Shrub Granular (1.1% imidacloprid granular plus 2-1-1 fertilizer) was applied at a rate of 1.29 g ai/DBH inch. 132g product/inch DBH was applied around the base of the tree within 3 feet of the trunk. Applications were made on 27 Oct, 2005, 14 Dec, 2006 and 28 Nov, 2007.
- 9) Arena 50 WDG (clothianidin) as a basal drench – was applied at a rate of 1.4 g ai/inch DBH. The appropriate amount of Arena was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 8 Nov, 2005.
- 10) AceCap 97 Trunk Implants (0.875 grams acephate per cap) - were placed every 4" around the base of the tree in a 3/8 inch diameter, 3/4 inch deep holes drilled into the trunk of the tree and sealed with a plastic cap on 16 May 2006.
- 11) AceCap Dinotefuron Trunk Implants (0.51 grams dinotefuron per cap) - were placed every 4" around the base of the tree in a 3/8 inch diameter, 3/4 inch deep holes drilled into the trunk of the tree and sealed with a plastic cap on 16 May 2006.
- 12) **Compound L** – An experimental trunk implant - was placed every 4" around the base of the tree in a 3/8 inch diameter, 3/4 inch deep holes drilled into the trunk of the tree and sealed with a plastic cap on 16 May 2006.
- 13) Conserve (11.6% spinosad (1 lb ai/gal)) soil injection - was applied at a rate of 0.96 gr ai/inch DBH (8.0 ml prod/inch DBH) as a soil injection. The appropriate amount of Conserve was calculated, divided by four and mixed with 1 liter of water. A Model 102 Ross Root Feeder, modified for use with an R & D Sprayers® CO<sub>2</sub> sprayer header, was used for each injection at 15

psi. Each injection point was approximately 4 inches deep and was located about one foot from the base of the tree in each of the cardinal directions. Applications were made on 31 May, 2006 and 31 May, 2007.

- 14) Conserve (11.6% spinosad (1lb ai/gal)) trunk spray as a double application - was applied at a rate of 0.2 fl oz prod /gallon as a bark spray. One ounce of product was mixed in a 5 gallon tank with 5 gallons of water and was sprayed on the trunk (approximately 1 gallon per tree (0.7 gr ai/tree per application)) and low scaffold branches with a R & D Sprayers<sup>®</sup> CO<sub>2</sub> sprayer at 50 psi through a single nozzle hand-held with an 8008 nozzle on 15 Jun, 2006 and 7 Jul, 2006. This treatment was reapplied on 18 Jun, 2007 and 10 Jul, 2007.
- 15) Merit Tree Injection 200 SL (200gr imidacloprid/liter) summer 2006 - was injected with the ArborJet VIPER injection system at a rate of 0.6 gr ai/inch DBH. The number of plugs inserted into each tree was determined by DBH/2. Each injection was done through a plastic septum (ArborJet #3 plug - 9/32") at 150-200psi on 29 Jun, 2006.
- 16) Merit Tree Injection 200 SL (200gr imidacloprid/liter) summer 2006 - was injected with Bartlett microinjectors at a rate of 0.6 gr ai/inch DBH. The number of microinjectors was determined by DBH/2 on 6 Jul, 2006.
- 17) Merit 75WP (imidacloprid) as a basal drench - was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 2 Jun, 2006 and 18 May, 2007.
- 18) NI-25 (acetamiprid, 92.5 gr ai/L) trunk injection 2006, 2007 - was injected with the ArborJet VIPER injection system as a trunk injection at a rate of 0.28 gr ai/inch DBH. The number of plugs used was determined by DBH/2 then each injection was done through a plastic septum (ArborJet #3 plug - 9/32") at 150-200psi on 13 Jun, 2006. A repeat trunk injection was done using the Arborjet Tree IV system at the rate of 1.11 gr ai/inch DBH was injected through 4 injection sites per tree through a plastic septum (Arborjet #4 plug - 3/8") at 45 psi on 9 Aug, 2007.
- 19) NI-25 (acetamiprid, 92.5 gr ai/L) trunk injection 2006, trunk spray 2007 - was injected with the ArborJet VIPER injection system at a rate of 0.56 gr ai/inch DBH. The number of plugs used was determined by DBH/2 then each injection was done through a plastic septum (Arborjet #3 plug - 9/32") at 150-200psi. on 13 Jun, 2006. A bark spray of Tristar 30SG (acetamiprid) was applied at a rate of 3.8g prod /inch DBH (1.14 gr ai/inch DBH.) The Tristar was mixed with 1.5 fl oz/inch DBH of Capsil (non-ionic spray adjuvant) and 60ml water/inch DBH and was sprayed on the trunk and low scaffold branches (approximately 1 gallon/tree) with a R & D Sprayers<sup>®</sup> CO<sub>2</sub> sprayer at 50 psi through a single nozzle hand-held with an 8008 nozzle on 27 Aug, 2007.

- 20) Arena 50 WDG (clothianidin) as a basal drench – was applied at a rate of 1.4 g ai/inch DBH. The appropriate amount of Arena was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 2 Jun, 2006. Poncho 600 FS (clothianidin 600 gr ai/L) was applied at a rate of 0.85 gr ai/inch DBH. The appropriate amount of Poncho was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 29 Nov, 2007.
- 21) ArborJet ImaJet (5% imidacloprid) trunk injection fall 2006 - was injected with the ArborJet Tree IV System at a rate of 0.4 gr ai/inch DBH through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 3 Oct, 2006.
- 22) Safari 20SG (dinotefuron) basal drench spring 2007 - was applied at a rate of 12 g prod/inch DBH (2.4 gr ai/inch DBH) as a basal soil drench. The appropriate amount of Safari was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 18 May, 2007.
- 23) Emamectin benzoate trunk injection spring 2007 – sponsored by ArborJet and Syngenta. Injections were made with the ArborJet QUIK-jet micro-injector. The number of injection sites was determined by DBH/2. The given rate of 0.1 gr ai/inch DBH was injected through a plastic septum (ArborJet #4 plug - 3/8") on 21 May, 2007.
- 24) Emamectin benzoate trunk injection spring 2007 - sponsored by ArborJet and Syngenta. Injections were made with the ArborJet QUIK-jet micro-injector. The number of injection sites was determined by DBH/2. The given rate of 0.2 gr ai/inch DBH was injected through a plastic septum (ArborJet #4 plug - 3/8") on 21 May, 2007.
- 25) Untreated Control 2

Canopy die-back ratings were made for each tree on 6 Jul, 2006 and 6 Jul 2007, by comparing the canopy of each tree with photographs in various stages of decline going from 0% (healthy) to 100% (dead) in 5% increments. Ratings were made by more than one individual and the ratings were averaged.

Branches from the upper 1/3 of the tree canopy were sampled between 19 Sep and 26 Sep 2006 and between 8 Oct and 12 Oct 2007. Three branches were removed from each tree by the arborists of the City of East Lansing. Branches selected for pruning were spaced as far apart as possible to maintain canopy balance. The length and diameters of each branch were recorded and used to calculate the surface area sampled. EAB galleries and larvae were counted after removing bark with a drawknife and chisel. Bark-scraping was done at Michigan State University's Entomology Field Research Station where scraping could be done in an indoor environment. Each of the branches was then examined to determine how many old galleries, new galleries and live larvae were present.



## Results

There were no statistical differences in either the 2006 or the 2007 dieback samplings. However, the dieback is a reflection of gallery counts impacted by chemical treatments made from the previous year. The amount of dieback is indicative of the amount of EAB damage to the tree. In the trees that received effective treatments in 2006, dieback either decreased or remained the same in 2007. The controls increased from 16% to 28% dieback over the course of the year. The Safari treatment's dieback was similar to the control, as it doubled, but since it was not treated in 2006, the dieback increase is a reflection of the normal decline in the tree with no treatment and an expected change in dieback should be evident in 2008 due to the 2007 treatment.

The average area of bark sampled per tree ranged from 272 in<sup>2</sup> to 580 in<sup>2</sup> and averaged 420 in<sup>2</sup>. The average of larval gallery counts was calculated for each tree and converted to galleries/m<sup>2</sup>. In 2006, the mean ratings ranged from 0 to just under 5 larvae per m<sup>2</sup>. There were no significant differences between treatments, although the means in the larvae and the galleries gave an indication of the effectiveness of the treatments made in 2006. In 2007, larval density ranged from 0 up to 20 larvae per m<sup>2</sup>. In branch samples collected in fall of 2007, no EAB larvae were found in trees injected with emamectin benzoate in fall of 2005 (trt 1), trees injected with emamectin benzoate in spring of 2007 (trt 24), or in trees receiving an imidacloprid basal drench in spring of 2006 and spring of 2007 (trt 17), compared with a mean of 19.3 larvae per m<sup>2</sup> found in control trees. Only 1.1 larvae per m<sup>2</sup> were found in trees receiving trunk injections of acetamiprid in June 2006 and August 2007. Basal soil drenches of clothianidin in June of 2006 resulted in 1.8 larvae per m<sup>2</sup>, while basal drenches of imidacloprid in fall of 2005 and 2006 yielded 2.7 larvae per m<sup>2</sup>. Other treatments giving good protection from EAB larvae were basal soil drenches of dinotefuron in May of 2007 (4.0 larvae per m<sup>2</sup>), trunk injection of acetamiprid in June of 2006 and August of 2007 (4.0 larvae per m<sup>2</sup>), and a basal application of imidacloprid granules in fall of 2005 and fall of 2006 (6.5 larvae per m<sup>2</sup>).

Overall, trunk injections of emamectin benzoate are providing excellent protection from EAB for at least 2 years following a single injection, and annual basal drenches of imidacloprid in the spring are also giving excellent control. It is important to note that these trees are intermediate in size (10 - 20" DBH). Annual basal soil drenches with imidacloprid have given a consistently high level of protection for small (< 10" DBH) and intermediate (10 - 16" DBH) sized trees, but less consistent results for larger trees, especially when stressed by physical damage, poor soils or drought. Also, of interest are the very promising results with trunk injections of acetamidprid, and basal drenches with clothianidin and dinotefuron.

**2006 Results**

	Chemical + Formulation	Application Type	Rate	Common Name	Application Date(s)	n	Larvae/m <sup>2</sup>	New Galleries/m <sup>2</sup>	Old Galleries/m <sup>2</sup>
1	Emamectin Benzoate 4%	Trunk Injection	0.4 gr ai/DBH in	Emamectin Benzoate	27 Sep, 2005	9	na	na	na
24	Emamectin Benzoate 4%	Trunk Injection	0.2 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	na	na	na
23	Emamectin Benzoate 4%	Trunk Injection	0.1 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	na	na	na
17	Merit 75WSP	Basal Soil Drench	1.42 gr ai/DBH in	Imidacloprid	2 Jun, 2006, 18 May, 2007	10	0.0 a	0.0 a	0.0 a
18	NI-25 (92.5g/L)	Trunk Injection	0.28 gr ai/DBH in + 1.11 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 9 Aug, 2007	10	0.9 a	0.9 a	0.6 a
20	Arena 50WDG + Poncho 600FS	Basal Soil Drench	1.4 gr ai/DBH in + 0.85 gr ai/DBH in	Clothianidin	2 Jun, 2006, 29 Nov, 2007	10	0.5 a	2.1 a	1.0 a
22	Safari 20SG	Basal Soil Drench	2.4 gr ai/DBH in	Dinotefuron	18 May, 2007	10	na	na	na
7	Bayer Advanced Liquid (1.47%)	Basal Soil Drench	1.38 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	9	0.8 a	0.8 a	0.6 a
19	NI-25 + Tristar 30SG (92.5g/L)	Trunk Injection + Bark Spray	0.56 gr ai/DBH in + 1.14 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 27 Aug, 2007	9	0.0 a	0.0 a	1.2 a
8	Bayer Advanced Granular (1.1%)	Basal Granular Spread	1.29 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	10	4.2 a	6.3 a	1.1 a
13	Conserve SC (11.6%)	Soil Injection	0.96 gr ai/DBH in	Spinosad	31 May, 2006, 31 May, 2007	9	2.5 a	0.6 a	0.7 a
6	<b>Untreated Control</b>					<b>10</b>	<b>3.1 a</b>	<b>3.9 a</b>	<b>2.3 a</b>
14	Conserve SC (11.6%)	Bark Spray	0.7 gr ai/tree	Spinosad	15 Jun, 2006, 7 Jul, 2006 & 18 Jun, 2007, 10 Jul, 2007	9	0.8 a	2.5 a	0.6 a

# 2007 Results

Trt No.	Chemical + Formulation	Application Type	Rate	Common Name	Application Date(s)	n	Larvae/m <sup>2</sup>	New Galleries/m <sup>2</sup>	Old Galleries/m <sup>2</sup>
1	Emamectin Benzoate 4%	Trunk Injection	0.4 gr ai/DBH in	Emamectin Benzoate	27 Sep, 2005	9	0.0 a	0.0 a	0.0 a
24	Emamectin Benzoate 4%	Trunk Injection	0.2 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	0.0 a	0.6 ab	5.3 cd
23	Emamectin Benzoate 4%	Trunk Injection	0.1 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	0.0 a	0.0 a	2.1 abcd
17	Merit 75WSP	Basal Soil Drench	1.42 gr ai/DBH in	Imidacloprid	2 Jun, 2006, 18 May, 2007	10	0.0 a	0.0 a	0.4 ab
18	NI-25(92.5g/L)	Trunk Injection	0.28 gr ai/DBH in + 1.11 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 9 Aug, 2007	10	1.1 ab	1.9 abc	1.1 ab
20	Arena 50WDG + Poncho 600FS	Basal Soil Drench	1.4 gr ai/DBH in + 0.85 gr ai/DBH in	Clothianidin	2 Jun, 2006, 29 Nov, 2007	10	1.8 ab	2.1 abc	0.3 ab
22	Safari 20SG	Basal Soil Drench	2.4 gr ai/DBH in	Dinotefuron	18 May, 2007	10	4.0 ab	4.1 abc	4.4 bcd
7	Bayer Advanced Liquid (1.47%)	Basal Soil Drench	1.38 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	9	2.7 ab	2.9 abc	0.4 ab
19	NI-25 + Tristar 30SG (92.5g/L)	Trunk Injection + Bark Spray	0.56 gr ai/DBH in + 1.14 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 27 Aug, 2007	9	4.0 abc	5.7 bcd	0.4 ab
8	Bayer Advanced Granular (1.1%)	Basal Granular Spread	1.29 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	10	6.5 abc	6.8 bc	1.6 abc
13	Conserve SC (11.6%)	Soil Injection	0.96 gr ai/DBH in	Spinosad	31 May, 2006, 31 May, 2007	9	11.7 bcd	12.3 cde	3.0 abc
6	Untreated Control					20	19.3 cd	19.9 de	2.8 bcd
14	Conserve SC (11.6%)	Bark Spray	0.7 gr ai/tree	Spinosad	15 Jun, 2006, 7 Jul, 2006 & 18 Jun, 2007, 10 Jul, 2007	9	19.8 d	23.1 e	8.2 d

**2006 & 2007 Dieback Ratings**

Treatment No.	Chemical + Formulation	Application Type	Rate	Common Name	Application Date(s)	n	2006 Dieback	2007 Dieback
1	Emamectin Benzoate 4%	Trunk Injection	0.4 gr ai/DBH in	Emamectin Benzoate	27 Sep, 2005	9	7.3 a	12.9 a
2	Emamectin Benzoate 4%	Trunk Injection	0.4 gr ai/DBH in	Emamectin Benzoate	27 Sep, 2005	10	12.5 a	9.9 a
3	ImaJet (5%)	Trunk Injection	0.2 gr ai/DBH in	Imidacloprid	27 Sep, 2005, 21 May, 2007	10	16.5 a	8.3 a
4	Merit 200SL	Trunk Injection	0.4 gr ai/DBH in	Imidacloprid	17 Oct, 2005	9	13.3 a	8.8 a
5	Merit 200SL	Trunk Injection	0.6 gr ai/DBH in	Imidacloprid	17 Oct, 2005	10	12.8 a	14.3 a
6	<b>Untreated Control</b>					<b>20</b>	<b>16.0 a</b>	<b>28.8 a</b>
7	Bayer Advanced Liquid	Basal Soil Drench	1.38 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	9	11.8 a	10.8 a
8	Bayer Advanced Granular	Basal Granular Spread	1.29 gr ai/DBH in	Imidacloprid	27 Oct, 2005, 14 Dec, 2006, 28 Nov, 2007	10	17.0 a	16.4 a
9	Arena 50WDG	Basal Soil Drench	1.4 gr ai/DBH in	Clothianidin	8 Nov, 2005	10	11.8 a	10.5 a
10	AceCap 97	Trunk Implant	0.875 gr prod/cap	Acephate	16 May, 2006	10	22.8 a	23.1 a
11	Dinotefuron Implant	Trunk Implant	0.51 gr prod/cap	Dinotefuron	16 May, 2006	10	11.8 a	9.0 a
12	Compound L	Trunk Implant	X	X	16 May, 2006	10	10.5 a	19.9 a
13	Conserve SC	Soil Injection	0.96 gr ai/DBH in	Spinosad	31 May, 2006, 31 May, 2007	9	16.0 a	13.7 a
14	Conserve SC	Bark Spray	0.7 gr ai/tree	Spinosad	15 Jun, 2006, 7 Jul, 2006 & 18 Jun, 2007, 10 Jul, 2007	9	19.3 a	21.5 a
15	Merit 200SL	Trunk Injection	0.6 gr ai/DBH in	Imidacloprid	29 Jun, 2006	9	20.3 a	19.4 a
16	Merit 200SL	Trunk Injection	0.6 gr ai/DBH in	Imidacloprid	6 Jul, 2006	10	15.8 a	21.8 a
17	Merit 75WSP	Basal Soil Drench	1.42 gr ai/DBH in	Imidacloprid	2 Jun, 2006, 18 May, 2007	10	11.8 a	9.2 a
18	NI-25	Trunk Injection	0.28 gr ai/DBH in + 1.11 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 9 Aug, 2007	10	18.0 a	19.6 a
19	NI-25 + Tristar 30SG	Trunk Injection + Bark Spray	0.56 gr ai/DBH in + 1.14 gr ai/DBH in	Acetamiprid	13 Jun, 2006, 27 Aug, 2007	9	13.3 a	8.0 a
20	Arena 50WDG + Poncho 600FS	Basal Soil Drench	1.4 gr ai/DBH in + .85 gr ai/DBH in	Clothianidin	2 Jun, 2006, 29 Nov, 2007	10	9.8 a	8.2 a
21	ImaJet (5%)	Trunk Injection	0.2 gr ai/DBH in	Imidacloprid	3 Oct, 2006	10	21.8 a	22.4 a
22	Safari 20SG	Basal Soil Drench	2.4 gr ai/DBH in	Dinotefuron	18 May, 2007	10	11.1 a	22.9 a
23	Emamectin Benzoate 4%	Trunk Injection	0.1 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	20.3 a	17.4 a
24	Emamectin Benzoate 4%	Trunk Injection	0.2 gr ai/DBH in	Emamectin Benzoate	21 May, 2007	10	18.5 a	23.1 a

## EL 2007 EAB Stats

### Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value
Treatment	13	14.388	1.107	4.555	.0001
Residual	121	29.397	.243		

Dependent: log larvae

### Fisher's Protected LSD

Effect: Treatment

Dependent: log larvae

Significance level: .05

Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005  
 Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007  
 Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007  
 Merit 75 WSP 1.9g prod/DBH in Spring 2006/07  
 Tristar 3ml/DBH in Spring 2006 + 12ml/DBH in Fall 2007  
 Arena 50WDG drench 1.9g product/DBH in Spring 2006  
 Safari Drench 12g prod/DBH in Spring 2007  
 Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07  
 Tristar 6ml/DBH in Spring 2006 + Trunk Spray Fall 2007  
 Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07  
 Untreated Control  
 Conserve Soil Inject 8ml/DBH in Spring 2006/07  
 Conserve Bark Spray 2 applications Summer 2006/07  
 Untreated Control 2

Count	Mean	
9	0.000	a
10	0.000	a
10	0.000	a
10	0.000	a
10	.203	a b
10	.233	a b
10	.317	a b
9	.330	a b
9	.401	a b
10	.455	b
10	.541	b c
9	.622	b c d
9	.939	c d
10	1.055	d

### Means Table

Effect: Treatment

Dependent: Larvae

Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005  
 Untreated Control  
 Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07  
 Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07  
 Conserve Soil Inject 8ml/DBH in Spring 2006/07  
 Conserve Bark Spray 2 applications Summer 2006/07  
 Merit 75 WSP 1.9g prod/DBH in Spring 2006/07  
 Tristar 3ml/DBH in Spring 2006 + 12ml/DBH in Fall 2007  
 Tristar 6ml/DBH in Spring 2006 + Trunk Spray Fall 2007  
 Arena 50WDG drench 1.9g product/DBH in Spring 2006  
 Safari Drench 12g prod/DBH in Spring 2007  
 Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007  
 Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007  
 Untreated Control 2

Count	Mean	Std. Dev.	Std. Error
9	0.000	0.000	0.000
10	6.859	9.445	2.987
9	2.730	5.180	1.727
10	6.476	11.694	3.698
9	11.673	23.553	7.851
9	19.794	20.161	6.720
10	0.000	0.000	0.000
10	1.147	1.908	.603
9	4.006	6.965	2.322
10	1.800	3.763	1.190
10	4.054	8.652	2.736
10	0.000	0.000	0.000
10	0.000	0.000	0.000
10	31.828	38.131	12.058

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value
Treatment	13	16.505	1.270	5.169	.0001
Residual	121	29.722	.246		

Dependent: log new

Fisher's Protected LSD

Effect: Treatment

Dependent: log new

Significance level: .05

	Count	Mean	
Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005	9	0.000	a
Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007	10	0.000	a
Merit 75 WSP 1.9g prod/DBH in Spring 2006/07	10	0.000	a
Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007	10	.082	a b
Arena 50WDG drench 1.9g product/DBH in Spring 2006	10	.296	a b c
Tristar 3m/DBH in Spring 2006 + 12m/DBH in Fall 2007	10	.303	a b c
Safari Drench 12g prod/DBH in Spring 2007	10	.317	a b c
Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07	9	.355	a b c
Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07	10	.464	b c
Tristar 6m/DBH in Spring 2006 + Trunk Spray Fall 2007	9	.487	b c
Untreated Control	10	.611	c
Conserve Soil Inject 8m/DBH in Spring 2006/07	9	.645	c d
Conserve Bark Spray 2 applications Summer 2006/07	9	1.083	d e
Untreated Control 2	10	1.127	e

Means Table

Effect: Treatment

Dependent: New

	Count	Mean	Std. Dev.	Std. Error
Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005	9	0.000	0.000	0.000
Untreated Control	10	7.426	9.557	3.022
Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07	9	2.949	5.185	1.728
Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07	10	6.783	11.904	3.764
Conserve Soil Inject 8m/DBH in Spring 2006/07	9	12.336	23.551	7.850
Conserve Bark Spray 2 applications Summer 2006/07	9	23.079	20.088	6.696
Merit 75 WSP 1.9g prod/DBH in Spring 2006/07	10	0.000	0.000	0.000
Tristar 3m/DBH in Spring 2006 + 12m/DBH in Fall 2007	10	1.915	2.525	.799
Tristar 6m/DBH in Spring 2006 + Trunk Spray Fall 2007	9	5.714	8.327	2.776
Arena 50WDG drench 1.9g product/DBH in Spring 2006	10	2.128	3.732	1.180
Safari Drench 12g prod/DBH in Spring 2007	10	4.054	8.652	2.736
Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007	10	0.000	0.000	0.000
Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007	10	.560	1.771	.560
Untreated Control 2	10	32.453	37.655	11.907

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value
Treatment	13	4.283	.329	2.019	.0245
Residual	121	19.750	.163		

Dependent: log old

Fisher's Protected LSD

Effect: Treatment

Dependent: log old

Significance level: .05

Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005  
 Arena 50WDG drench 1.9g product/DBH in Spring 2006  
 Merit 75 WSP 1.9g prod/DBH in Spring 2006/07  
 Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07  
 Tristar 6ml/DBH in Spring 2006 + Trunk Spray Fall 2007  
 Tristar 3ml/DBH in Spring 2006 + 12ml/DBH in Fall 2007  
 Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07  
 Untreated Control  
 Conserve Soil Inject 8ml/DBH in Spring 2006/07  
 Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007  
 Safari Drench 12g prod/DBH in Spring 2007  
 Untreated Control 2  
 Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007  
 Conserve Bark Spray 2 applications Summer 2006/07

Count	Mean	
9	0.000	a
10	.061	a b
10	.067	a b
9	.071	a b c
9	.075	a b c
10	.110	a b c
10	.175	a b c d
10	.225	a b c d
9	.236	a b c d
10	.269	a b c d e
10	.402	b c d e
10	.426	c d e
10	.474	d e
9	.617	e

Means Table

Effect: Treatment

Dependent: Old

Emamectin Benzoate 4% 0.4gr ai/DBH in Fall 2005  
 Untreated Control  
 Bayer Advanced Drench 90ml prod/DBH in Fall 2005/06/07  
 Bayer Granular Spread 132g prod/DBH in Fall 2005/06/07  
 Conserve Soil Inject 8ml/DBH in Spring 2006/07  
 Conserve Bark Spray 2 applications Summer 2006/07  
 Merit 75 WSP 1.9g prod/DBH in Spring 2006/07  
 Tristar 3ml/DBH in Spring 2006 + 12ml/DBH in Fall 2007  
 Tristar 6ml/DBH in Spring 2006 + Trunk Spray Fall 2007  
 Arena 50WDG drench 1.9g product/DBH in Spring 2006  
 Safari Drench 12g prod/DBH in Spring 2007  
 Emamectin Benzoate 4% 0.1gr ai/DBH in Spring 2007  
 Emamectin Benzoate 4% 0.2gr ai/DBH in Spring 2007  
 Untreated Control 2

Count	Mean	Std. Dev.	Std. Error
9	0.000	0.000	0.000
10	1.550	2.972	.940
9	.376	1.127	.376
10	1.571	3.976	1.257
9	3.020	7.494	2.498
9	8.204	11.107	3.702
10	.370	1.170	.370
10	1.148	3.630	1.148
9	.411	1.233	.411
10	.310	.980	.310
10	4.390	7.133	2.256
10	2.073	3.344	1.058
10	5.326	8.370	2.647
10	4.056	6.222	1.968



2007 Dieback  
EAB East Lansing

**Type III Sums of Squares**

Source	df	Sum of Squares	Mean Square	F-Value	P-Value
Treatment	24	5866.554	244.440	1.370	.1234
Residual	224	39979.675	178.481		

Dependent: conv dieback

**Means Table**

**Effect: Treatment**

**Dependent: 2007 Dieback**

	Count	Mean	Std. Dev.	Std. Error
Eamectin Benzoate 4% 1:1 w/ water F05	10	12.900	14.806	4.682
Eamectin Benzoate 4% 1:5 w/ water F05	10	9.900	11.338	3.585
ImaJet F05/S07	10	8.300	11.156	3.528
Merit 200SL 2ml/DBH in F05	10	8.800	6.579	2.081
Merit 200SL 3ml/DBH in F05	10	14.300	12.446	3.936
Untreated Control	10	28.800	27.908	8.825
Bayer Advanced Drench 90ml/DBH F05/F06	10	10.800	6.477	2.048
Bayer Granular Spread 118g/DBH F05/F06	10	16.400	15.960	5.047
Arena 50WDG F05	10	10.500	9.204	2.911
AceCap 97 S06	10	15.400	12.020	3.801
Dinotefuron Caps S06	10	9.000	8.819	2.789
CSI-1444401 S06	10	19.900	10.630	3.361
Conserve Soil Inject 8ml S06/S07	10	13.700	8.394	2.654
Conserve Bark Spray 1app S06	9	14.444	16.853	5.618
Conserve Bark Spray 2apps S06/S07	10	21.500	22.810	7.213
Merit 200SL VIPER S06	10	19.400	20.435	6.462
Merit 200SL Bartlett Microinjector S06	10	21.800	20.253	6.405
Merit 75WSP S06/S07	10	9.200	15.915	5.033
Tristar 3ml/DBH S06 + 12ml/DBH F07	11	19.545	24.337	7.338
Tristar 6ml/DBH S06 + Spray F07	10	8.000	7.817	2.472
Arena 50WDG S06	10	8.200	11.708	3.702
ImaJet F06	9	22.444	30.025	10.008
Safari Drench S07	10	22.900	20.420	6.457
Eamectin Benzoate 4% small trees S07	10	17.400	13.476	4.261
Eamectin Benzoate 4% large trees S07	10	23.100	19.513	6.171

## Master List

**ASH:** *Fraxinus pennsylvanica* Marsh. D. R. Smitley, K. F. Newhouse & T. W. Davis  
EMERALD ASH BORER; Department of Entomology  
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**EMERALD ASH BORER (EAB) CONTROL ON STREET TREES, 2007:** Ash street trees in a neighborhood in Adrian, MI were used for this test (Lenawee Co, MI T6S R3E, T7S R3E). These trees were between 14 and 28 years old and ranged in size from 6-26 inches in diameter at breast height (DBH). The mean DBH was 17 inches. The trees used in the test were planted and maintained by the city of Adrian and were located between the street and the sidewalk in five different neighborhoods. Trees were spaced a minimum of 50 ft apart. The tree canopies ranged from 15 to 45 feet in diameter, and in no case did they overlap. Tree trunks were measured and marked with a metal tag during the first week of September 2005. Lawns where study trees were located were well maintained, but very few were irrigated. Each treatment was replicated 10 times with each replicate consisting of an individual tree. The following is a list of products tested, type of application, rate, and application date:

- 1) ArborJet ImaJet (5% imidacloprid) trunk injection spring 2006 - was done using the ArborJet Tree IV System at a rate of 0.4 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 23 May, 2006.
- 2) ArborJet ImaJet (5% imidacloprid) trunk injection spring 2006 - was done using the ArborJet Tree IV System at a rate of 0.4 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 23 May, 2006.
- 3) Enamectin benzoate formulation trunk injection – sponsored by ArborJet and Syngenta was done using the ArborJet Tree IV system. 0.4 grams ai/ DBH inch was injected through 4 injection sites per tree through a plastic septum (Arborjet #4 plug - 3/8") at 45 psi diluted to a 1:1 ratio with water on 22 Jun, 2006.
- 4) Enamectin benzoate formulation trunk injection - sponsored by ArborJet and Syngenta was done using the ArborJet Tree IV system. 0.4 grams ai/ DBH

inch was injected through 4 injection sites per tree through a plastic septum (ArborJet #4 plug - 3/8") at 45 psi diluted to a 1:1 ratio with water on 22 Jun, 2006.

- 5) Merit 75WP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 27 Jun, 2006 and 24 May, 2007.
- 6) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured around the base of the tree within 2 feet of the trunk on 11 Nov, 2006 and 24 Apr, 2007.
- 7) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured around the base of the tree within 2 feet of the trunk on 11 Nov, 2006, 24 Apr, 2007 and 5 Nov, 2007.
- 8) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured around the base of the tree within 2 feet of the trunk on 24 Apr, 2007 and 5 Nov, 2007.
- 9) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured in a 6" deep moat made with a Earth Bud-Eze™ V-Hoe around the base of the tree, within 18-24 inches of the trunk on 9 Nov, 2006 and 5 Nov, 2007.
- 10) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured around the base of the tree within 2 feet of the trunk on 24 Apr, 2007. Xytect Infusable (5% imidacloprid) was injected into the tree with the Bartlett Tree Injector at a rate of g ai/DBH inch on 25 Jun, 2007.
- 11) Xytect 75WSP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Xytect was mixed in 1 quart of water/DBH inch and poured around the base of the tree within 2 feet of the trunk on 9 Nov, 2006. Xytect Infusable (5% imidacloprid) was injected into the tree with the Bartlett Tree Injector at a rate of g ai/DBH inch on 25 Jun, 2007.
- 12) Merit 75WP (imidacloprid) as a basal drench – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water

and poured around the base of the tree within 2 feet of the trunk on 7 Nov, 2006 and 5 Nov, 2007.

- 13) Untreated Control
- 14) Merit 75WP (imidacloprid) as a basal drench, sponsored by DuPont – was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 24 Apr, 2007.
- 15) Acelepryn 1.67SC (rynaxypyr) as a basal drench, sponsored by DuPont – was applied at a rate of 1.48g ai/DBH inch. The appropriate amount of Acelepryn was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 24 Apr, 2007.
- 16) ArborJet ImaJet (5% imidacloprid) trunk injection was done using the ArborJet Tree IV System at a rate of 0.2 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 6 Jun, 2007.
- 17) ArborJet ImaJet (5% imidacloprid) trunk injection was done using the ArborJet Tree IV System at a rate of 0.4 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 6 Jun, 2007.
- 18) Merit Tree Injectable (imidacloprid 200SL) trunk injection was done using the ArborJet Tree IV System at a rate of 0.2 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/2 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 6 Jun, 2007.
- 19) Merit Tree Injectable (imidacloprid 200SL) trunk injection was done using the ArborJet Tree IV System at a rate of 0.4 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/2 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 7 Jun, 2007.
- 20) ArborJet ImaJet (5% imidacloprid) trunk injection, sponsored by Bayer and ArborJet - was done using the ArborJet Tree IV System at a rate of 0.2 gr ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 6 Jun, 2007. Merit 75WP (imidacloprid) as a basal drench was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 6 Jun, 2007.
- 21) ArborJet ImaJet (5% imidacloprid) trunk injection, sponsored by Bayer and ArborJet - was done using the ArborJet Tree IV System at a rate of 0.4 gr

ai/DBH inch. The number of plugs inserted into each tree was determined by DBH/3 and injected through a plastic septum (ArborJet #4 plug - 3/8") at 45psi on 6 Jun, 2007. Merit 75WP (imidacloprid) as a basal drench was applied at a rate of 1.42g ai/DBH inch. The appropriate amount of Merit was mixed in 1.5 gal of water and poured around the base of the tree within 2 feet of the trunk on 6 Jun, 2007.

Canopy die-back ratings were made for each tree on 12 Jul 2007, by comparing the canopy of each tree with photographs in various stages of decline going from 0% (healthy) to 100% (dead) in 5% increments. Ratings were made by more than one individual and the ratings were averaged.

Branches from the upper 1/3 of the tree canopy were sampled between 15 Oct and 19 Oct 2007. Three branches were removed from each tree by the arborists of the City of Adrian. Branches selected for pruning were spaced as far apart as possible to maintain canopy balance. The length and diameters of each branch were used to calculate the surface area sampled. EAB galleries and larvae were counted after removing bark with a drawknife and chisel. Bark-scraping was done at Michigan State University's Entomology Field Research Station where scraping could be done in an indoor environment. Each of the branches was then examined to determine how many old galleries, new galleries and live larvae were present.

## Results

The infestation of emerald ash borer in Adrian, Michigan continued to grow rapidly in 2007. When the bark was removed from branch samples, the population increase was evident in the difference between old galleries (0.3 per m<sup>2</sup>) and new galleries (8.3 per m<sup>2</sup>). Only the emamectin benzoate trunk injection in 2006 (2.4 new galleries per m<sup>2</sup>) and the ImaJet trunk injection at 0.4 g ai/ inch dbh in June 2007 (1.3 new galleries per m<sup>2</sup>) significantly reduced the number of new galleries per m<sup>2</sup> compared with the control treatment. Also, only the emamectin benzoate trunk injection in June 2006 (5.5 % dieback) resulted in a significant reduction in the amount of canopy thinning and dieback due to emerald ash borer (16.0 % in control treatment). Other trunk injection and drench treatments look promising after galleries were counted in October, 2007, but another year of increasing EAB activity is needed to see clear differences from the control treatment.

## 2007 Adrian Results

Trt No.	Chemical and Formulation	Application Type	Rate	Common Name	Application Date	2006 Dieback	2007 Dieback	n	Old Galleries	New Galleries	Larvae
1	Imajet (5%)- 2 yr	Trunk Injection	0.4 gr ai/DBH inch	Imidacloprid	23 May, 2006	6.5 abc	16.0 bcdef	-	-	-	-
2	Imajet (5%)- 3yr	Trunk Injection	0.4 gr ai/DBH inch	Imidacloprid	23 May, 2006	13.9 bcd	19.8 bcdef	-	-	-	-
3	Emamectin Benzoate 4%- 2yr	Trunk Injection	0.4 gr ai/DBH inch	Emamectin Benzoate	22 Jun, 2006	7.3 abc	5.5 a	9	2.5 a	2.4 a	2.4 a
4	Emamectin Benzoate 4%- 3yr	Trunk Injection	0.4 gr ai/DBH inch	Emamectin Benzoate	22 Jun, 2006	8.0 abc	8.8 abc	-	-	-	-
5	Merit 75WP Spring	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	27 Jun, 2006 & 24 May, 2007	3.5 a	9.8 abcd	10	0.0 a	4.0 ab	3.6 ab
6	Xytect 75WSP	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	9 Nov, 2006 & 24 Apr, 2007	7.0 abc	10.8 abcde	9	3.3 a	22.6 b	21.5 b
7	Xytect 75WSP	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	9 Nov, 2006 & 24 Apr, 2007	8.5 abc	10.0 ab	9	0.3 a	6.8 ab	6.4 ab
8	Xytect 75WSP	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	24 Apr, 2007	5.8 ab	17.3 bcdef	8	5.0 a	12.7 b	11.3 ab
9	Xytect 75WSP	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	9 Nov, 2006 & 5 Nov, 2007	9.8 bc	17.8 bcdef	10	4.5 a	21.9 b	20.4 b
10	Xytect 75WSP +Xytect Infusable (5%)	Trunk Injection + Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	24 Apr, 2007 & 25 Jun, 2007	23.5 d	38.0 g	9	3.4 a	8.7 b	7.7 ab
11	Xytect 75WSP +Xytect Infusable (5%)	Trunk Injection + Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	9 Nov, 2006 & 25 Jun, 2007	16.8 cd	19.8 cdef	9	4.0 a	12.7 b	12.3 b
12	Merit 75WP Fall	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	7 Nov, 2006 & 5 Nov, 2007	8.0 abc	24.5 fg	10	1.3 a	8.7 ab	7.6 ab
14	Dupont Merit 75WP	Basal Soil Drench	1.42 gr ai/DBH inch	Imidacloprid	24 Apr, 2007	15.8 cd	21.3 ef	9	1.2 a	24.7 b	24.1 b
15	Acelepryn 1.67SC	Basal Soil Drench	1.48 gr ai/DBH inch	Rynaxypyr	24 Apr, 2007	14.0 cd	23.3 def	9	7.0 a	26.9 b	25.9 b
16	Imajet (5%)	Trunk Injection	0.2 gr ai/DBH inch	Imidacloprid	6 Jun. 2007	8.0 abc	12.3 abcdef	-	-	-	-
17	Imajet (5%)	Trunk Injection	0.4 gr ai/DBH inch	Imidacloprid	6 Jun. 2007	13.6 bcd	11.1 abcde	9	2.0 a	1.3 a	1.3 a
18	Merit Tree Injection (200SL)	Trunk Injection	0.2 gr ai/DBH inch	Imidacloprid	6 Jun. 2007	9.3 abc	9.0 abcd	-	-	-	-
19	Merit Tree Injection (200SL)	Trunk Injection	0.4 gr ai/DBH inch	Imidacloprid	7 Jun. 2007	14.5 bcd	11.0 abcde	9	1.9 a	5.4 ab	4.5 ab
20	Imajet (5%) + Merit 75WP	Trunk Injection + Basal Soil Drench	0.2 gr ai/DBH inch + 1.42 gr ai/DBH inch	Imidacloprid	8 Jun. 2007	15.0 bcd	22.3 def	9	2.8 a	18.4 ab	8.4 ab
21	Imajet (5%) + Merit 75WP	Trunk Injection + Basal Soil Drench	0.4 gr ai/DBH inch + 1.42 gr ai/DBH inch	Imidacloprid	6 Jun. 2007	10.5 bc	9.8 abcde	-	-	-	-
13	Control					9.0 abc	16.0 bcdef	9	0.3 a	8.3 b	6.3 ab

Means followed by the same letter are not significantly different ( $p < 0.05$ ). Data transformed arcsine (sqrt x) prior to ANOVA. Untransformed mean percentages are presented in table.



## U.S. Fish & Wildlife Service

### Threatened & Endangered Species System

#### Illinois

##### Notes:

- This report shows the listed species associated in some way with this state.
- This list does not include experimental populations and similarity of appearance listings.
- This list includes non-nesting sea turtles and whales in State/Territory coastal waters.
- This list includes species or populations under the sole jurisdiction of the National Marine Fisheries Service.
- Click on the highlighted scientific names below to view a Species Profile for each listing.

##### Listings and occurrences for Illinois – 37 listings

- 27 occurring in Illinois
- 10 not occurring in Illinois
- 0 species listed in some other state occurring in Illinois

##### Animals – 27 listings

- 18 occurring in Illinois
- 9 not occurring in Illinois
- 0 species listed in some other state occurring in Illinois

##### Status Species listed in this state and that occur in this state

E	Amphipod, Illinois cave ( <u><a href="#">Gammarus acherondytes</a></u> )
E	Bat, gray ( <u><a href="#">Myotis grisescens</a></u> )
E	Bat, Indiana ( <u><a href="#">Myotis sodalis</a></u> )
E	Blossom, tubercled (pearlymussel) Entire Range; Except where listed as Experimental Populations ( <u><a href="#">torulosa</a></u> )
E	Butterfly, Karner blue ( <u><a href="#">Lycaeides melissa samuelis</a></u> )
E	Catspaw (=purple cat's paw pearlymussel) Entire Range; Except where listed as Experimental Populations ( <u><a href="#">obliquata obliquata</a></u> )
E	Dragonfly, Hine's emerald ( <u><a href="#">Somatochlora hineana</a></u> )
E	Fanshell ( <u><a href="#">Cyprogenia stegaria</a></u> )
E	Higgins eye (pearlymussel) ( <u><a href="#">Lampsilis higginsii</a></u> )
E	Mucket, pink (pearlymussel) ( <u><a href="#">Lampsilis abrupta</a></u> )
E	Pimpleback, orangefoot (pearlymussel) ( <u><a href="#">Plethobasus cooperianus</a></u> )

- E Plover, piping Great Lakes watershed (*Charadrius melodus*)
- E Pocketbook, fat (*Potamilus capax*)
- E Puma (=cougar), eastern (*Puma (=Felis) concolor cougar*)
- E Snail, Iowa Pleistocene (*Discus macclintocki*)
- E Sturgeon, pallid (*Scaphirhynchus albus*)
- E Tern, least interior pop. (*Sterna antillarum*)
- E Wolf, gray Lower 48 States, except where delisted and where EXPN. Mexico. (*Canis lupus*)

**Status Species listed in this state that do not occur in this state**

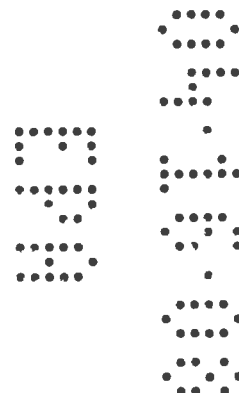
- E Beetle, American burying (*Nicrophorus americanus*)
- E Clubshell Entire Range; Except where listed as Experimental Populations (*Pleurobema clava*)
- E Curlew, Eskimo (*Numenius borealis*)
- E Mapleleaf, winged Entire; except where listed as experimental populations (*Quadrula fragosa*)
- E Mussel, scaleshell (*Leptodea leptodon*)
- E Pearlymussel, cracking Entire Range; Except where listed as Experimental Populations (*Hemistena lata*)
- E Riffleshell, northern (*Epioblasma torulosa rangiana*)
- E Ring pink (mussel) (*Obovaria retusa*)
- E Wartyback, white (pearlymussel) (*Plethobasus cicatricosus*)

**Plants -- 10 listings**

- 9 occurring in Illinois
- 1 not occurring in Illinois
- 0 species listed in some other state occurring in Illinois

**Status Species listed in this state and that occur in this state**

- T Aster, decurrent false (*Boltonia decurrens*)
- T Bush-clover, prairie (*Lespedeza leptostachya*)
- T Daisy, lakeside (*Hymenoxys herbacea*)
- T Milkweed, Mead's (*Asclepias meadii*)
- T Orchid, eastern prairie fringed (*Platanthera leucophaea*)
- T Pogonia, small whorled (*Isotria medeoloides*)
- T Potato-bean, Price's (*Apios priceana*)





E      Prairie-clover, leafy (*Dalea foliosa*)

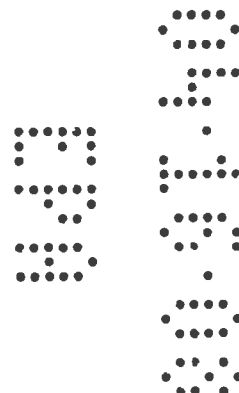
T      Thistle, Pitcher's (*Cirsium pitcheri*)

**Status**    **Species listed in this state that do not occur in this state**

E      Clover, running buffalo (*Trifolium stoloniferum*)

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[FWS Endangered Species Home](#) | [ECOS Home](#) | [Contact ECOS](#) | [Privacy](#) | [Disclaimer](#)





## MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

### 1. PRODUCT IDENTIFICATION

Product Name: **TREE-äge** Product No.: A16297A  
EPA Signal Word: Warning  
Active Ingredient(%): Emamectin Benzoate (4%) CAS No.: 155569-91-8  
Chemical Name: Avermectin B1, 4"-deoxy-4"-(methylamino)-,(4"R)-, benzoate (salt)  
Chemical Class: Insecticide  
EPA Registration Number(s): Not Available Section(s) Revised: New

### 2. HAZARDS IDENTIFICATION

#### Health and Environmental

Causes eye and skin irritation. May be harmful if swallowed. Harmful if inhaled. Vapors may cause drowsiness and dizziness.

Inhalation can cause irritation to the respiratory tract and can result in chemical pneumonitis if aspirated. Ingestion results in central nervous system effects such as muscle tremors, decreased activity, ataxia (unsteadiness or incoordination), and dilated pupils (mydriasis).

#### Hazardous Decomposition Products

May decompose at high temperatures forming toxic gases.

#### Physical Properties

Appearance: Blue liquid

Odor: Aromatic

#### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Tetrahydrofurfuryl Alcohol (THFA)	Not Established	Not Established	2 ppm (TWA) ****	No
Emamectin Benzoate (4%)	Not Established	Not Established	0.02 mg/m <sup>3</sup> TWA ***	No

\*\*\* Syngenta Occupational Exposure Limit (OEL)

\*\*\*\* Recommended by AIHA (American Industrial Hygiene Association)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: C, S

### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison

Product Name: **TREE-äge**

Page: 1

control center or doctor, or going for treatment.

- Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

#### Notes to Physician

Contains petroleum distillate - vomiting may cause aspiration pneumonia.

Early signs of intoxication include dilation of pupils, muscular incoordination and muscular tremors. Vomiting within one-half hour of exposure can minimize toxicity following accidental ingestion of the product; rapidly after exposure (<15 minutes) administer repeatedly medical charcoal in a large quantity of water or ipecac. If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parental fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure levels and proper respiratory functionality) as indicated by clinical signs, symptoms and measurements.

In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since emamectin benzoate is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic emamectin benzoate exposure.

#### Medical Condition Likely to be Aggravated by Exposure

None known.

## **5. FIRE FIGHTING MEASURES**

### Fire and Explosion

Flash Point (Test Method):	> 226°F (Pensky-Martens CC)	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	662°F	
Flammability:	Not Applicable	

### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### In Case of Fire

Use dry chemical, foam or CO<sub>2</sub> extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

## **6. ACCIDENTAL RELEASE MEASURES**

### In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

## 7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

- Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
- Eye Contact: Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- Skin Contact: Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.
- Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance: Blue liquid
- Odor: Aromatic
- Melting Point: Not Applicable
- Boiling Point: Not Available
- Specific Gravity/Density: 1.08 g/cm<sup>3</sup> @ 68°F (20°C)
- pH: 4.6 (1% solution in deionized H<sub>2</sub>O @ 77°F [25°C])

### Solubility in H<sub>2</sub>O

- Emamectin Benzoate: 30 - 50 ppm (pH 7)

### Vapor Pressure

- Emamectin Benzoate: 3 x 10<sup>-8</sup> mmHg @ 70°F (21°C)

## 10. STABILITY AND REACTIVITY

- Stability: Stable under normal use and storage conditions.
- Hazardous Polymerization: Will not occur.
- Conditions to Avoid: None known.
- Materials to Avoid: None known.
- Hazardous Decomposition Products: May decompose at high temperatures forming toxic gases.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

- Ingestion: Oral (LD50 Female Rat) : 3129 mg/kg body weight
- Dermal: Dermal (LD50 Rat) : > 5000 mg/kg body weight
- Inhalation:

Inhalation (LC50 Rat) : > 2.54 mg/l air - 4 hours  
Eye Contact: Severely Irritating (Rabbit)  
Skin Contact: Slightly Irritating (Rabbit)  
Skin Sensitization: Not a Sensitizer (Guinea Pig)

#### Reproductive/Developmental Effects

Emamectin Benzoate: Developmental and reproductive toxicity observed in dosages that are toxic to mature animals.

#### Chronic/Subchronic Toxicity Studies

Emamectin Benzoate: Tremors and nerve lesions observed at lowest dose tested in rabbits. Bladder changes reported in rats.

#### Carcinogenicity

Emamectin Benzoate: None observed.

#### Other Toxicity Information

None

#### Toxicity of Other Components

Tetrahydrofurfuryl Alcohol (THFA)

May be harmful if swallowed. Causes respiratory tract irritation. Causes skin irritation. May cause digestive tract irritation. Causes severe eye irritation. Inhalation overexposure may cause dizziness, incoordination and unconsciousness. Chronic overexposure may affect the kidney.

#### Target Organs

##### Active Ingredients

Emamectin Benzoate: Central nervous system, bladder

##### Inert Ingredients

Tetrahydrofurfuryl Alcohol (THFA): Digestive tract, respiratory tract, skin, eye, CNS, kidney

## 12. ECOLOGICAL INFORMATION

#### Summary of Effects

Emamectin Benzoate:

Very toxic to aquatic life with long lasting effects.

#### Ecotoxicity Effects

Emamectin Benzoate:

Fish (Rainbow Trout) 96-hour LC50 174 ppb

Fish (Bluegill Sunfish) 96-hour LC50 180 ppb

Green Algae 5-day EC50 > 3.9 ppb

Bird (Bobwhite Quail) LD50 Oral 264 mg/kg

Bee (Contact) LD50 0.0035 ug/bee

Invertebrate (Water Flea) 48-hour EC50 1.0 ppb

#### Environmental Fate

Emamectin Benzoate:

The information presented here is for the active ingredient, emamectin benzoate.

Low bioaccumulation potential. Persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 h).

## 13. DISPOSAL CONSIDERATIONS

#### Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

#### 14. TRANSPORT INFORMATION

##### DOT Classification

Ground Transport - NAFTA

Not regulated by US DOT.

Air Transport - NAFTA

Not regulated by US DOT.

##### B/L Freight Classification

Insecticides, NOI, O/T Poison

##### Comments

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Emamectin Benzoate), Marine Pollutant

Hazard Class or Division: Class 9

Identification Number: UN 3082

Packing Group: PG III

IMDG EMS #: F-A, S-F

Air Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Emamectin Benzoate), Marine Pollutant

Hazard Class or Division: Class 9

Identification Number: UN 3082

Packing Group: PG III

Packing Auth.: 914

Note: Max. inner container 5 liter; Max. single container 450 liter

#### 15. REGULATORY INFORMATION

##### EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Not Applicable

##### California Proposition 65

Not Applicable

##### CERCLA/SARA 302 Reportable Quantity (RQ)

None

##### RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

##### TSCA Status

Exempt from TSCA, subject to FIFRA

#### 16. OTHER INFORMATION

##### NFPA Hazard Ratings

Health: 2

Flammability: 1

Instability: 0

##### HMIS Hazard Ratings

Health: 1

Flammability: 1

Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 11/30/2007

Revision Date:

Replaces:

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS



State Regulatory Affairs  
410 Swing Road  
Greensboro, NC 27419

Telephone: (336) 632 2146  
Fax: (336) 632 2884

March 24, 2008

Scott Frank  
Manager, Support Services  
Bureau of Environmental Programs  
Illinois Dept of Agriculture  
PO Box 19281, 801 E. Sangamon Ave  
Springfield, IL 62794-9281

SUBJECT:	TREE-äge™ (EPA Reg. No. 100-RGNO) SLN Application for Emerald Ash Borer Control in Ash ( <i>Fraxinus</i> spp.) Active Ingredient: Emamectin Benzoate
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Dear Mr. Frank:

Attached please find a special local need application for the use of TREE-äge for control of emerald ash borer (EAB) in Ash. TREE-äge is especially formulated for application as a tree injection. The active ingredient, emamectin benzoate, is registered in the US as a foliar treatment for insect pest control in vegetables, pome fruits, and cotton. Of the two end-use products, Proclaim® (EPA Reg. No. 100-904) and Denim® (EPA Reg. No. 100-904), Proclaim has been registered and Illinois for several years.

The justification is there is not another federally registered product as efficacious as TREE-age for control of this APHIS quarantine pest in Illinois.

#### **Efficacy**

The efficacy studies supporting this use were conducted by Dr. Deb McCullough of Michigan State University. Field research demonstrates that TREE-age is more efficacious than the current standards against EAB.

#### **TREE-äge Regulatory Status at USEPA**

TREE-äge does not currently have a Section 3 registration with EPA. The Section 3 draft label, product chemistry and acute toxicology studies were submitted to EPA on December 20, 2007. These studies were assigned reference (MRID) numbers and passed the front end screen at EPA. The EPA correspondence for the submission is included with this package. In summary, TREE-äge is ready for review at the Agency with a PRIA registration decision scheduled for mid-July 2008. This is well after the optimum tree injection application window of mid-April.



While currently registered Syngenta branded products that contain emamectin benzoate (Proclaim and Denim) are classified for Restricted Use (RU), in the EPA submission for registration for TREE-äge we did not propose RU for this product. Syngenta scientists felt that because of the use pattern as a tree injection there was little or no environmental exposure potential, and since the RU classification for the products noted above was based on ecotoxicity concerns, Syngenta reasoned that it was not necessary for TREE-äge to be classified for RU.

Subsequent discussions with EPA (Thomas Harris in the Insecticide Branch, Registration Division) confirmed that our position was reasonable. In fact, Mr. Harris indicated to Syngenta that no internal EPA ecological risk assessment was deemed necessary for TREE-äge since the EPA staff were comfortable with tree injection technology and the lack of exposure in the environment outside the target tree itself from this application technique. While the final Section 3 registration decision/approval will not occur until July 2008, our discussions with EPA have led us to believe that TREE-äge will not be classified for Restricted Use by EPA.

Please feel free to contact Thomas Harris of EPA's Registration Division at (703) 308-9423 for further discussion on the processing of the registration request for TREE-äge.

#### **Tolerances for Emamectin Benzoate**

The use sites/crops on the proposed TREE-äge Section 24(c) label do not require tolerances.

#### **Confidential Statement of Formula (CSF)**

The Confidential Statement of Formula (CSF) for TREE-äge is Confidential Business Information (CBI) and Syngenta Crop Protections requests that all applicable Illinois law be used for its protection.

#### **Summary**

TREE -äge is the most efficacious product available for control of EAB. Although the formulation is not yet approved by EPA, Product Chemistry and Acute Toxicology studies have been conducted to determine the appropriate Hazard and Precautionary Language. Tolerances are not required for this crop use pattern.

Enclosed in support of this submission are:

- Draft Section 24(c) label for TREE-äge providing Directions for Use on ash
- Section 24(c) Booklet Label for container
- Draft Section 3 label pending at EPA
- EPA 8570-25 form
- MSDS for TREE-äge
- Letter of support from Dr. Phil Nixon, University of Illinois being sent by Dr. Nixon
- Efficacy Data from Dr. Smitley, Michigan State University
- State of Illinois Pesticide Product Registration Form and check for \$200.00
- Syngenta submission on December 20, 2007 to EPA for TREE-äge Section 3 label
- EPA Letter dated December 27, 2007 passage of front-end screen
- EPA Letter dated December 31, 2007 assigning MRID numbers to studies
- Acute Toxicology Studies and Product Chemistry studies submitted to EPA. See Attachment 1 for list of studies
- Confidential Statement of Formula (in separate folder)

Mr. Scott Frank  
March 24, 2008  
Page 3

Syngenta believes it has included sufficient evidence to support approval of this application. However, please feel free to contact me at 1 (800) 334-9481, ext. 2146 if you have questions or require any further data or information.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Zang". The signature is fluid and cursive, with the first name "Larry" and last name "Zang" clearly distinguishable.

Larry Zang  
Senior Regulatory Manager

Enclosures

CC: Dr. Nixon

**SYNGENTA CROP PROTECTION**  
**TREE-äge™ (EPA REG. NO 100-RGNO)**  
**ACTIVE INGREDIENT Enamectin Benzoate**

**March 24, 2008**

**List of Submitted Documents**

**Acute Toxicology Studies**

<b>MRID Number</b>		<b>Study Title</b>	<b>EPA Guideline</b>
<b>47309303</b>	4 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Acute Oral Toxicity Up-and-Down Procedure in Rats; (T007407-06), (09003aeb80273dda), (462221)	870.1100
<b>47309304</b>	5 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Acute Dermal Toxicity in Rats; (T007408-06), (09003aeb80273dda), (462223)	870.1200
<b>47309305</b>	6 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Acute Inhalation Toxicity in Rats; (T007412-06), (09003aeb80273dda), (462231)	870.1300
<b>47309308</b>	7 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Primary Eye Irritation in Rabbits; (T007410-06), (09003aeb80273dda), (462227)	870.2400
<b>47309307</b>	8 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Primary Skin Irritation in Rabbits; (T007409-06), (09003aeb80273dda), (462225)	870.2500
<b>47309308</b>	9 OF 9	Enamectin Benzoate ME (042.9) (A16297A) -Dermal Sensitization Test - Buehler Method; (T007411-06), (09003aeb80273dda), (462229)	870.2600
<b>Product Chemistry</b>			
<b>47309302</b>	3 OF 9	A16297A -Physical and Chemical Properties of Enamectin Benzoate ME (042.9) (A16297A); (PC-07-085), (09003aeb80273dda), (462237)	830.6302, 830.6303, 830.6304, 830.6314, 830.6315, 830.6316, 830.6319, , 830.7000, 830.7100, 830.7300

## 24(C) CHECKLIST

STATE: ILLINOISSLN NO. IL80001DATE REGISTERED: 04-15-200890-DAY DATE: 07-15-2008

SPECIFIC SPECIAL LOCAL NEED: \_\_\_\_\_

SITE: \_\_\_\_\_

PEST/PROBLEM: \_\_\_\_\_

1. Is the State certified to issue this type of registration? \_\_\_\_\_
2. Was the EPA Application/Notification Form submitted? \_\_\_\_\_
3. Was all the required information included on the form? \_\_\_\_\_
4. Was a confidential formula submitted (for new products)? \_\_\_\_\_
5. Is this registration for a "CHANGED USE PATTERN"? \_\_\_\_\_
6. Has an FR document been prepared for this "CHANGED USE PATTERN"? \_\_\_\_\_
7. Tolerances required? \_\_\_\_\_ Established? \_\_\_\_\_ Citation: \_\_\_\_\_
8. Full labeling being used? \_\_\_\_\_ Supplemental directions? \_\_\_\_\_
9. Does label state "FOR DISTRIBUTION AND USE ONLY WITHIN (State)"? \_\_\_\_\_
10. Does full label comply with 40 CFR 162.10, as follows:

- a. Product name, brand or trademark? \_\_\_\_\_
- b. Name and address of registrant? \_\_\_\_\_
- c. Net contents? \_\_\_\_\_
- d. Product registration number? \_\_\_\_\_
- e. Producing establishment number? \_\_\_\_\_
- f. Ingredient statement? \_\_\_\_\_
- g. Precautionary labeling? \_\_\_\_\_
- h. Directions for use for special local need? \_\_\_\_\_
- i. Use classification? \_\_\_\_\_

Was proper format followed? \_\_\_\_\_

11. Is supplemental directions for use labeling satisfactory? \_\_\_\_\_
12. Was supplemental labeling compared with EPA-registered label? \_\_\_\_\_

COMMENTS: \_\_\_\_\_

1 SLN No IL080001 2 PM 23 3 Action Code \_\_\_\_\_

4 State Issue Date

0	4	1	5	0	8
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5 Date received by EPA

0	4	1	6	0	8
---	---	---	---	---	---

6 Date received by PM

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7 Chemical name \_\_\_\_\_

8 Chemical code 4

9 Use \_\_\_\_\_

10. Reviews requested:

	Date Sent	Due Date	Date Returned	Response Code	Response Date
HED					
EFB					
RCB					
EEB					
TB					
RD					
PM					
S					
Precaut. Labeling					
Chemistry					
Efficacy					

11. Status \_\_\_\_\_

12. FINAL ACTION Response code \_\_\_\_\_

Response date

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**Illinois**  
Department of  
**Agriculture**

**Rod R. Blagojevich, Governor**  
**Thomas E. Jennings, Acting Director**

**Bureau of Environmental Programs**

State Fairgrounds • P.O. Box 19281 • Springfield, IL 62794-9281 • 217/785-2427 (voice/TDD) • Fax 217/524-4882  
Pesticide Misuse Hotline 1-800-641-3934 (voice/TDD)

May 9, 2008

SLN Processing  
Office of Pesticide Programs 7504P  
U.S. Environmental Protection Agency  
2777 S. Crystal Drive  
Arlington, VA 22202

Sent via Federal Express

Dear Sir/Madam:

On April 15, 2008, the Illinois Department of Agriculture approved a Section 24(c) Special Local Need (SLN) request from Syngenta Crop Protection, Inc. for the use of TREE-age<sup>TM</sup> insecticide (EPA file symbol 100-RGNO, active ingredient emamectin benzoate) to control Emerald Ash Borer in ash trees in Illinois.

Registration number: IL080001

Syngenta contacted the Department today indicating they had made a change to the label by adding and updating the Personal Protective Equipment language. A statement regarding the appropriate type of gloves was added to the label.

Enclosed are copies of the updated SLN label and the cover letter from Syngenta.

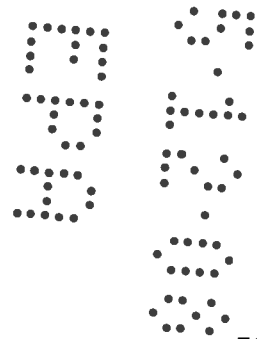
Feel free to contact me with any questions at 217-785-2427.

Sincerely,

Scott Frank, Manager  
Support Services

Enclosures

cc: Larry Zang, Syngenta  
USEPA Region 5





State Regulatory Affairs  
410 Swing Road  
Greensboro, NC 27419

Telephone: (336) 632 2146  
Fax: (336) 632 2884

May 9, 2008

Scott Frank  
Manager, Support Services  
Bureau of Environmental Programs  
Illinois Dept of Agriculture  
PO Box 19281, 801 E. Sangamon Ave  
Springfield, IL 62794-9281

<b>SUBJECT:</b> TREE-äge™ (EPA Reg. No. 100-RGNO) EPA SLN No.IL-080001 Request to Revise SLN by Addition of PPE Language Active Ingredient: Enamectin Benzoate
---

Dear Mr. Frank:

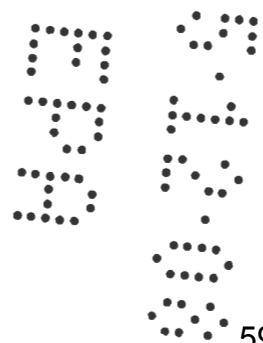
Attached please find a request to revise the subject SLN label. Specifically, we are adding and updating the Personal Protective Equipment (PPE) language that currently appears only on the container label. The statement regarding the appropriate type of gloves was inadvertently omitted from the PPE language on the container label and is being added via the SLN label.

EPA headquarters in Washington, D. C. is aware we are adding the appropriate glove statement to the SLN.

If you have any questions, please feel free to contact me.

Sincerely,

Larry Zang  
Senior Regulatory Manager



**syngenta**

**ITERA**

**FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF ILLINOIS**

**TREE-äge™**

**EPA SLN No. IL- 080001**

**For control of Emerald Ash Borer in Ash Trees (*Fraxinus spp.*),  
Tree Injection Only**

Active Ingredient:	
Eamectin Benzoate <sup>1</sup> .....	4.0%
Other Ingredients: .....	96.0%
Total:	100.0%

<sup>1</sup>CAS No.155569-91-8

**KEEP OUT OF REACH OF CHILDREN.**

**WARNING/AVISO**

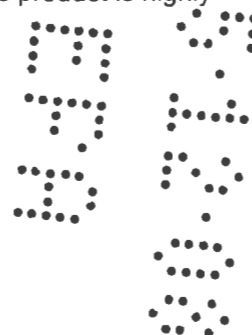
Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use on label and in in booklet

**FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY  
RESULT IN POOR INSECT CONTROL, AND/OR CROP INJURY.**

**Environmental Hazards**

This product is highly toxic to fish, mammals and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater. This product is highly toxic to bees exposed to direct treatment or residues on blooming trees.





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## PRECAUTIONARY STATEMENTS

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### Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- chemical resistant gloves (Category C) such as barrier laminate, butyl rubber >14 mils, nitrile rubber >14 mils, or neoprene rubber >14 mils.
- shoes and socks
- protective eyewear

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## DIRECTIONS FOR USE

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It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the TREE-äge container label.

This label must be in the possession of the user at the time of pesticide application.

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## APPLICATION TO ASH TREES (*Fraxinus* spp.)

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TREE-äge is for control of emerald ash borer on ash trees growing in residential and commercial landscapes, parks, plantations, right of ways, seed orchards, and forested sites (in private, municipal, state, tribal and national areas). TREE-äge contains the active ingredient emamectin benzoate and is formulated to translocate in the tree's vascular system when injected. To assure optimum effectiveness, this product must be placed into active sapwood.

### WHEN TO TREAT

TREE-äge contains the active ingredient emamectin benzoate which is a glycoside insecticide. It is active against larva and adult Emerald Ash Borer. The primary route of toxicity is through ingestion, but may also be lethal upon contact.

**ENVIRONMENTAL CONDITIONS:** Uptake of TREE-äge is dependent upon the tree's transpiration. Transpiration is dependent on a number of abiotic and biotic factors, such as soil moisture, soil and ambient temperature, and time of day. For optimal uptake, apply when soil is moist, soil temperatures are above 45°F, ambient temperatures are between 40° to 90°F, and during the 24 hour period when transpiration is greatest, typically before 2:00 PM. Applications to drought or heat stressed trees may result in injury to tree tissue, poor treatment and subsequent control. Watering the trees prior to injection may enhance the uptake of TREE-äge.

**MONITOR TREE HEALTH and PEST INFESTATIONS:** Effective injection treatment is favored by a full canopy (i.e., leaves) and healthy vascular system. Once these tissues are compromised by arthropod damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of TREE-äge may be difficult to achieve and subsequent control may be poor. Optimally, treatment should be made preventively at least 2 to 3 weeks before Emerald Ash Borer historically infest the host tree. As a result of systemic movement and longevity of TREE-äge in trees, this interval may be extended much earlier to 6 months should tree dormancy, adverse weather, management, asynchronous life cycle of pests, etc., allow earlier application timing.

TREE-äge may also be effective as a curative treatment against Emerald Ash Borer. Adult foliar feeding may be controlled within one month after treatment. During the larval stage, Emerald Ash Borer attacks the stem and branches and will disrupt vascular tissue that may result in poor distribution of TREE-äge in an infested tree. However, control may be achieved if larvae come into contact or feed on TREE-äge treated tissues.

## USE

Use as formulated or dilute with equivalent 1 to 3 volumes of water or more, as necessary.

### USE RATE TABLE

Tree Diameter (DBH) (Inches)	Low ml./tree	Medium ml./tree	Medium - High ml./tree	High ml./tree	Average No. Injection Sites*
4 to 6	15	25	50	-	3
7 to 9	20	40	80	-	4
10 to 12	30	55	110	165	5
13 to 15	35	70	140	210	6
16 to 18	40	75	150	225	7
19 to 21	50	100	200	300	8
22 to 24	-	115	230	345	10
25 to 27	-	130	260	390	11
28 to 30	-	145	290	435	12
31 to 33	-	160	320	480	13
34 to 36	-	175	350	525	15
37 to 39	-	190	380	570	16
40 to 42	-	205	410	615	17
43 to 45	-	220	440	660	18
46 to 48	-	235	470	705	20
49 to 51	-	250	500	750	21
52 to 54	-	265	530	795	22
55 to 57	-	280	560	840	23
58 to 60	-	295	590	885	25
61 to 63	-	310	620	930	26
64 to 66	-	325	650	975	27
67 to 69	-	340	680	1020	28
70 to 72	-	355	710	1065	30

\* The number of injection sites listed is a guide for approximately how many are needed per size of tree.

For optimal control, it is recommended to be with  $\pm 1$  injection site of this number per tree. Higher rates tend to provide longer residual and control of more difficult to control insects. See **Target Pest** for additional information in choosing the amount of product to apply.

### Applications in Trees

Tree Tissue to Protect	Target Pest	Recommended Rate	Comments
Foliage, Shoot, Stem, Trunk and Branch	Emerald Ash Borer- Adult and Larval stages	Low to High	<p>For optimal control apply at least 30 days before historical egg hatch or adult flight and to trees whose vascular tissue is not damaged.</p> <p>If vascular tissue is damaged or plugged by insect galleries, nematodes or fungi, uniform treatment and control may not be achieved.</p>

### Compatibility

Do not mix TREE-äge before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants, and fertilizers.

### RESTRICTIONS

- Do not apply to trees that may yield food consumed by humans or used in animal feed.
- Avoid treating trees that are moisture stressed or suffering from herbicide damage.

### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

### Pesticide Storage

Store in a cool, dry place, away from children and pets. Keep from freezing.

### Pesticide Disposal

Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

### Container Disposal

Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

TREE-äge™ trademark of Arborjet, Inc.

24(c) registrant:  
Syngenta Crop Protection, Inc.  
P.O. Box 18300  
Greensboro, NC 27419-8300

ILRGNO041BA0508